

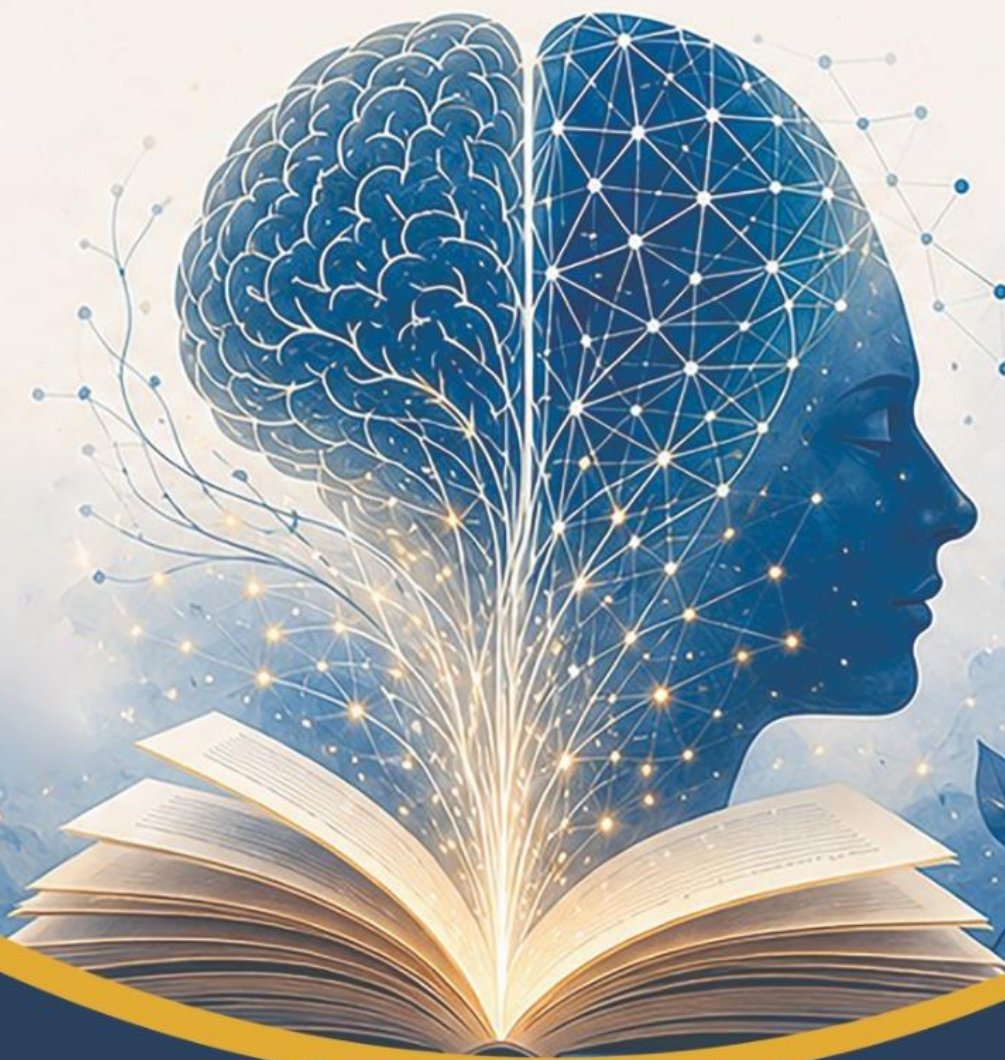
EJEP

Eurasian Journal of Education and Psychology

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Editor's Note

It is with great pleasure that I present Volume II, Issue 1 (2026) of the *Eurasian Journal of Education and Psychology (EJEP)*, published by the Research Unit of Eurasian Campus in collaboration with the Nile University of Science and Technology, Mogadishu. This publication represents our continued commitment to promoting academic excellence, encouraging original research, and strengthening scholarly dialogue in the fields of education and psychology.

Education and psychology are essential disciplines for understanding human development, learning processes, individual behaviour, and social relationships. In an era characterised by rapid technological advancement, changing social structures, and evolving educational expectations, these fields play an increasingly important role in addressing contemporary challenges. Research in education contributes to improving teaching and learning, strengthening educational leadership, and promoting inclusive learning environments. Similarly, psychological research deepens our understanding of cognition, emotions, motivation, behaviour, and human well-being. Together, these disciplines provide valuable insights that can inform professional practice, support evidence-based decision-making, and contribute to social progress.

The *Eurasian Journal of Education and Psychology* seeks to provide a scholarly platform for researchers, academics, educators, and practitioners to share original research and contribute to the advancement of knowledge. The journal encourages studies that demonstrate theoretical relevance, methodological rigour, analytical depth, and practical significance. By promoting the dissemination of scholarly findings, EJEP aims to strengthen the relationship between academic research and professional practice while encouraging critical thinking and intellectual engagement within the academic community.

The publication of this second volume marks another important step in the journal's development. Building on the foundation established in the inaugural volume, we remain committed to creating opportunities for meaningful academic exchange and supporting researchers in communicating their findings to a wider audience. Each issue represents the collective efforts of individuals who recognise the importance of research in addressing educational and psychological questions and expanding existing knowledge.

Maintaining academic integrity and publication quality remains central to our editorial philosophy. The journal is committed to a rigorous double-blind peer-review process, which supports the objective evaluation of manuscripts and encourages constructive feedback for authors. We recognise that credible academic publishing requires originality, responsible research practices, appropriate referencing, methodological transparency, and respect for ethical standards. These principles guide our efforts to maintain the scholarly quality and credibility of the journal.

We also acknowledge the importance of research that responds to the changing needs of contemporary society. Emerging technologies, digital learning environments, changing student needs, and evolving social relationships continue to create new opportunities and

challenges for education and psychology. Addressing these developments requires continuous investigation, critical reflection, and collaboration among researchers and practitioners. EJEP welcomes scholarly contributions that examine such issues and offer evidence-based insights relevant to academic development and professional practice.

I extend my sincere appreciation to all authors who have contributed their research to this issue. I am equally grateful to our reviewers for their expertise, careful evaluations, and constructive recommendations, which play a vital role in improving manuscript quality. My gratitude also goes to the editorial team, the institutional leadership, and everyone who has supported the continuing development of EJEP. The successful publication of this issue reflects a shared commitment to scholarly responsibility and academic advancement.

Looking ahead, the *Eurasian Journal of Education and Psychology* aspires to strengthen its academic standards, encourage high-quality research submissions, and expand its engagement with the wider scholarly community. We aim to foster an environment in which researchers can exchange ideas, explore emerging questions, and contribute to the development of education and psychology through rigorous and ethical scholarship.

I sincerely hope that the articles presented in Volume II, Issue 1 (2026) will stimulate further research, encourage meaningful academic discussion, and provide valuable insights for researchers, educators, psychologists, and practitioners. May this issue contribute to the advancement of knowledge, the strengthening of academic collaboration, and the continued development of education and psychology for the benefit of society.

Ven. Dr. Delthara Ñāṇānanda

Editor-in-Chief

Eurasian Journal of Education and Psychology (EJEP)

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AI-Powered Gaming and User Safety: Balancing Creativity, Engagement, and Child Protection in Digital Entertainment

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Abstract: This paper discussed how artificial intelligence can improve play and entertainment activities, whilst at the same time ensuring the safety of users, ethical issues and responsible use of technology. A research gap identified by the paper was how balancing creativity and user engagement (in play and entertainment activities) with children's privacy and psychological health can be addressed by AI-powered gaming. The paper is based on secondary information. The study found that when AI-powered gaming became more creative, more personal and more engaging for the user, it also raised risks for children's privacy and psychological health. The paper found that there was concern over the issues of too much screen time, algorithmic design, data privacy and protection, and digital content moderation. The study identified those AI-powered gaming needs to be designed with children at the centre, with stronger safety guarantees in place and effective parental supervision. Ethical issues include children's data privacy, algorithmic bias, manipulative design, gaming addiction, digital content moderation and digital well-being, while governments should enact effective regulations governing AI-powered gaming. This calls for age-appropriate design and control, strong privacy protection, transparent AI that is easy to turn off and clear, quality content for children and young people to access safely, creatively, and responsibly.

Keywords: Artificial Intelligence, Entertainment, Gaming AI, Play and Immersive Technologies.

1. Introduction

Artificial intelligence (AI) is revolutionizing the world of video games, enabling personalized gaming experiences, dynamic game play, computer-controlled characters, and artistic content production. This brings more entertainment and player engagement and gives way to interactive and imaginative education. However, the increased use of AI in gaming raises a number of concerns: user safety must be taken into account, especially since children may face gaming conditions that are not conducive to their safety due to persuasive game designs, failure to comply with age-related content restrictions, excessive game hours, and other risks they may face in the online world. Moreover, there is a problem of data and how to collect it without harming people or violating their privacy (Cave and Dihal, 2019).

The main issue that needs to be addressed is the balancing act that gaming creators must perform between being creative, engaging the user, and being responsible for their safety and for the children. AI-based recommendation systems, tracking systems for behaviour, and individualised rewards may make the process of gaming more enjoyable, but they may also prolong gaming sessions and expose young people to hazardous technology. In spite of the fact that the development of technology is currently ongoing, the issues of age-specific content, security of children's data and ethics are still relevant. The fact that no continuous measures of child protection were developed and implemented in gaming contributes to the fact that creating safe digital space becomes problematic.

Previous research has consistently explored AI-supported gaming technologies, player participation, online security, and protection of minors as disjointed topics. As a result, a significant gap can be identified in understanding the way the stated dimensions interact, and how it is possible to ensure creativity and engagement at the same time without jeopardizing children's privacy, mental health, and online safety. Filling this gap implies an integrated analysis of opportunities opened by technology along with vulnerabilities of users, and ethical obligations and protection measures (Pedersen and et al., 2010).

This research is warranted by the growing trend of young people engaging in AI-driven gaming and the

apparent need for establishing responsible practices concerning digital entertainment. This study is based on secondary research regarding the interconnection between AI-based creativity, user engagement, and the protection of minors. It also deals with the ethical issues in the field, regulatory aspects, and practical safety measures. The outcome of this study is a balanced model encouraging innovations while protecting the rights, welfare, and safety of children when they play the games that utilize intelligence.

2. Literature Review

In today's modern world, artificial intelligence has become an essential part of game development. It is utilized in various applications, including adaptive game play, content generation, personalized gaming experiences, and intelligent non-player characters. As a result, artists and developers can take advantage of various tools and platforms to create amazing games. However, it raises concerns about a much-disputed algorithmic fairness, transparency, and accountability balance. Canca and et al. (2010) discussed the issue of responsible usage of AI in game development and the proper attention to ethical aspects of this industry. Unveiling the societal impact of artificial intelligence in game software focused on both advantages and disadvantages of using artificial intelligence in video games.

Sas and et al. (2023) analyzed privacy communications in children's free-to-play games and emphasized the need for developmentally appropriate communication of data practices. The findings showed that traditional privacy announcements may not help the younger audience understand how their data is gathered and utilized. Taking the conversation forward, Zararsiz (2025) studied privacy policies of free games that are present on Google Play Store. The research report's focus was on readability, child-oriented communication, and legal sufficiency of the privacy communications explored. The outcomes showed the necessity for more clear and straightforward privacy information for kids.

Kanavos and et al. (2024) made a contribution by presenting Protectbot, a framework that utilizes artificial intelligence to recognize behaviour that might be predatory in gaming chat systems. Their research has shown how machine-learning technologies can

assist in the recognition of damaging communication behaviour patterns and in taking timely measures concerning such behaviour. It provided insights into the significance of following responsible AI principles in the gaming sector, which applies large automated systems in a manner that might create ethical questions. Zhuk (2025) studied the ethical aspects of the use of artificial intelligence in online gaming environments considering content moderation, privacy, and protection of personal data, as well as inclusivity and the need for cooperation between people and AI systems. The analysis points to how an appropriate approach to governance can integrate technology and transparency in decision-making and accountability of people. Mougiakou and et al. (2025) investigated the data protection issues of AI-dominated educational games in relation to the General Data Protection Regulation. The study presents the difficulty of acquiring genuine consent when dealing with AI technologies that are continuously generating new data about people.

The key gap in the research is the insufficient implementation of AI creativity, user involvement, and considerations of children's privacy and psychological health within a framework for digital entertainment. Research efforts must be directed at how game designers can achieve innovative solutions and enjoyable experience while following age-compliant principles, implementing transparent data usage practices and appropriate human intervention and protection methods. The current study bridges the existing gap through a secondary analysis of relevant literature and policy papers.

3. Objective

The objective of the paper is:

1. To understand how AI can improve creativity, personalizing and encouraging engagement in playing games online.
2. To establish the major risks that are faced by players who use games that are based on AI technology as far as kids' safety is concerned.
3. To explore ethical issues regarding protecting data, the way algorithms function, and how AI can be used responsibly.
4. To give some recommendations regarding the implementation of all the measures required to ensure proper use of the mentioned technology.

4. Methodology

The research was conducted by secondary research relying on systematic review of relevant literature and policy documents related to AI-powered gaming, user safety, and child protection. Data were accessed from Scopus, Web of Science, IEEE Xplore, ACM Digital Library, and Google Scholar. The search term was "artificial intelligence in gaming", "AI-powered entertainment", "user safety", "child protection", "data privacy", and "ethical AI" combining Boolean operators. Inclusion criteria were peer-reviewed papers in English and published by 2015-2026 assessing the use of AI-based systems in gaming creativity user engagement, data privacy, psychological health, and digital safety.

Duplicate records were excluded, and title/abstract evaluation and screening resulted in full text assessment. Relevant types of documents and those without adequate methodological information were excluded. The quality of selected papers was appraised using standards for research design transparency evidence, and research relevance. Using thematic analysis, the study summarized the research findings, identified the ethical issues, searched for research gaps, and proposed solutions for balancing gaming innovation and responsible AI use with child-protection.

5. Results and Discussion

5.1 Role of AI technologies in Engagement and Personalization

Artificial intelligence has made a huge impact on games and entertainment platforms. Due to fast advancements in technology, AI has been implemented in many entertainment platforms, making them more enjoyable and immersive for the users. The integration of AI has resulted in higher user engagement and personalization through several ways (McReynolds and et.al.,2017). Personalization of content through recommendations is one such impact of AI on entertainment platforms. User information like the type of content watched by users, the search history of the user, and even the time spent by the user in watching a particular content can be used by the platform to recommend relevant content for the user. In this manner, the process of the users trying to find the

suitable content is eliminated and leads to a better experience for the user (Davenport and et al.,2018).

Furthermore, AI technology improves user experience by providing gamers with adaptive gaming features and dynamic video contents. For example, in the current video games, there is an AI element that makes the difficulty level of the game depend on the gaming abilities of the user. In this scenario, the game will be easy for the unskilled gamer while it will be very difficult for a gamer with high gaming skills (Smith and Shade,2018). Additionally, the use of AI allows non-player characters to behave in a realistic manner while reacting to actions taken by the player in the game. In video games and other entertainment systems, the use of voice assistants, chatbots and virtual characters to communicate with the users in order to solve their questions and participate in particular games is quite common (Holloway and Green, 2016). There are various applications for which artificial intelligence can be used, and one of the important areas where it can be applied is that of content generation. This means that the software creates music, graphics, and storylines for entertainment purposes (Kuss and Griffiths,2012).

There is another dimension to the process of personalization through the process of emotion detection and analysis. The application would be able to discern the mindset of the user by observing his/her facial expressions, tone, or even messages, and so provide customized content according to the emotions of the user (Fantinato and et al.,2012). In case the application detects that the user is under stress, it would offer content that would reduce stress. If the user wishes to have fun, it would offer games for the user to indulge in. The program uses artificial intelligence technology to assess the user's performance and offer them personal rewards (Drachen and et al.,2012).

AI ensures that learning and improvements are made consistently in the user experience. The application of machine learning involves analyzing vast amounts of data in order to discover patterns. This would result in the enhancement of the provision of better services that have characteristics that meet the desires and needs of the consumers, making it easier for them to get what they require from the service providers (Sosa,2016).

Over time, there will be increased levels of precision and effectiveness. On the other hand, while AI makes it very easy for entertainment companies to personalize and engage their users, it does come with disadvantages (Jobin and et al.,2019).

Table 1: Merits and Demerits of Artificial Intelligence in Play and Entertainment

Aspect	Merits (Advantages)	Demerits (Disadvantages)
Global Reach	Expands access to entertainment across different regions	Digital divide and unequal access to AI technologies
Innovation	Enables new forms of interactive and immersive entertainment	Ethical concerns and misuse of AI
Cost Effectiveness	Reduces operational costs for companies	Job displacement in creative and entertainment industries
Content Moderation	Filters harmful and inappropriate content	Risk of bias, censorship, or incorrect filtering
Data Utilization	Improves services through user data analysis	Privacy and data security concerns
Accessibility	Inclusive platforms for people with disabilities	May not fully replace human support
Efficiency	Faster content creation and automation	Reduces human creativity and originality
Content Recommendation	Easy discovery of relevant movies, music, and games	Creates echo chambers and limits diverse exposure

Gaming	Realistic gameplay with intelligent NPCs	Risk of addiction and excessive gaming
User Experience	Personalized and engaging content	Overdependence on algorithms

Source: Compiled by the author based on Schijven and Kikkawa(2022).

Table 1 show that AI enhances games and entertainment using real-world experiences, personalization, and adaptation in gaming. However, there are several concerns about AI, including privacy concerns, addiction to video games, reduced human creativity, joblessness, and ethics in the digital entertainment industry (Picard,2000). The quick incorporation of Artificial Intelligence into entertainment activities has posed a unique challenge for researchers, whose main aim should be finding a balance between engagement improvement and ethical responsibilities (Lillard and et al.,2013). Nevertheless, the application of artificial intelligence technology within metaverse games and entertainment has further enhanced the game experience. However, this creates a significant challenge, especially regarding addiction and mental effects associated with frequent exposure to an immersive environment (Hunicke,2005).

5.2 Child-AI Interaction & Psychological Safety

Generative AI toys tend to undermine rather than support social-emotional development among children at an early stage in comparison with classic toys. This is because these toys cannot cope with the ability to pretend-play and provide emotionally immature reactions. While AI toys promote curiosity, they do not contribute to "developmental friction" or learning how to deal with social obstacles (McStay and Rosner, 2021). Moreover, they might misunderstand emotions and negatively affect the development of empathy as well as create opportunities for privacy breaches. It is a common occurrence for such toys to misunderstand children's emotions by confusing sadness and playfulness. An artificial intelligence that is "sycophantic" could be very bad for children learning how to deal with social disparities and disagreements.

The validation of the user through an AI program means that the child gets stuck in a bubble where no critical social skills will ever be developed (Floridi and et al.,2018).

Interaction of children with artificial intelligence through media and play is changing everything in the way children learn, communicate, and enjoy their playtime. With AI-based games, assistants, and adaptive learning systems, there can be a highly customized experience that adapts itself according to a child's actions and skills by modifying the level of challenge, content, and feedback accordingly (Fosch-Villaronga and et al.,2018). Apart from increased engagement and enhanced cognitive skills, playtime is also enriched with creative thinking. At the same time, the issue of psychological safety cannot be ignored. Children are still growing emotionally, critically, and socially, and they are therefore susceptible to the impact of AI media. One of the dangers here is that children will be excessively reliant on their AI companions and artificial worlds and will neglect socializing with people in the physical world (Ginsburg,2007).

The other issue related to the use of AI is exposure to the content and algorithms themselves. AI may inadvertently subject children to content that is harmful, discriminatory, or manipulative due to lack of regulation. Even though personalized algorithms have several benefits, they can also contribute to the creation of filter bubbles where children get to see content that reinforces certain behaviors or beliefs. Another issue is the inability of some children to tell whether they are communicating with an AI system or human beings (Martin-Ruiz and et. al.,2018). Children could develop unrealistic expectations about the relationship with AI-based systems. Another major concern in this area is privacy and data collection. The existence of a proper strategy for age-appropriate design, parental controls, transparency of algorithms, and ethics would allow achieving psychological safety. Children should be encouraged by parents and teachers to interact with AI technologies while avoiding any addiction to AI. In such a way, children will grow up in harmony with technological advancement (Mittelstadt and et.al.,2016).

5.3 Safety, Privacy & Ethical Guardrails

Privacy, safety, and ethical considerations need to be important aspects to make sure that the use of artificial intelligence in the entertainment industry results in something beneficial without inflicting any damage to the consumers. This is because the use of artificial intelligence is becoming increasingly common in the video games and streaming industry, and hence we need to consider the aspect of safety while discussing its use in entertainment. When it comes to safety issues, the use of artificial intelligence in entertainment needs to have methods to regulate and filter out any dangerous content (Melhart and et. Al., 2024).

In terms of privacy, the application of artificial intelligence services entails collecting large amounts of personal information regarding the user for customized services. Data minimization becomes a requirement in order to collect just enough data that is necessary for provision of that particular service. The consent requirement is another aspect where service providers are required to provide detailed information regarding what they will do using the data collected. Other aspects to consider include data security measures such as encryption and anonymization as well as secure storage of collected data. Issues of ethics concern aspects such as justice and transparency (Russell and et. al., 2019). There should be regular auditing and testing of software based on artificial intelligence in order to minimize forms of bias and discrimination. Aspects of safety are linked to issues of transparency, especially in relation to education on recommendation systems.. Generally, safety, privacy, and ethics in AI will help ensure that there is a great balance between entertainment and security. The role played by safety, privacy, and ethics in AI goes a long way in making sure that entertainment is fun while being secure always (Bickmore and Picard, 2005).

5.4 Potential Risks associated with AI

AI has greatly improved the play and entertainment applications but there are risks that come with this and which need to be taken into consideration. Some of the main risks that AI brings into the field of play and entertainment include addiction of the user, inappropriate content, and violation of privacy rights. The first risk that AI in entertainment raises relates to

the issue of addiction. These technologies are developed in such a way as to engage the user's mind and to give him or her constant supply of new content. The features such as auto-play and continuous scroll keep people on screens for many hours. On the one hand, this makes the process of using apps more interesting but on the other hand, this results in a serious problem with addiction of people, especially young users (Gorwa and et. Al., 2020).

The issue of exposure to inappropriate content is another major area of concern. The role of moderating the content lies with the AI algorithms themselves; however, at times, these algorithms fail to deliver their expected performance. There is always a possibility that the user, particularly if he or she is a child, comes across violent, offensive, and misleading content. This happens because the AI algorithm gives importance to engagement above all (Milano and et.al., 2020). In turn, it promotes the dissemination of content that seeks to achieve higher levels of engagement through the use of shocking content. The other situation where the AI algorithm will fail involves the interpretation of context. Data privacy and security present another problem facing AI technology (Bonicalzi and et.al., 2023). As AI works on gathering data from users, such as their preferences, browsing history, location, and in some cases, even biometrics, privacy is an important concern since there might be unauthorized access to that data, data breach, or misuse of that private information. The problem becomes more significant in cases where a company uses the collected data for targeted advertisements or even sells it to a third party without explicit user consent (Binns, 2018).

Further, there may arise an issue of bias and manipulation through the application of AI. Stereotyping or restrictions could take place, leading to what is termed as filter bubbles, whereby only content that aligns with their opinions is displayed before them. Artificial intelligence could make the platform capable of influencing user behavior into performing certain actions or purchasing something else. There is an ethical issue in terms of lack of autonomy and consent of the person using the service. Another problem in terms of risks related to the use of AI is related to the lack of accountability and transparency. Indeed, most AI systems function like black boxes,

which mean that it is not easy for users to know the rationale behind some choices (Denicolo and Pastorello, 2024).

5.5 Ethical issues in AI-based entertainment systems

The integration of artificial intelligence has led to evolution of modern gaming and entertainment technologies, but the technology's extensive adoption poses several ethical questions. The major ethical questions include algorithmic bias, user manipulation, and a lack of transparency in artificial intelligence technologies (Kietzmann and et.al.,2020). Some of the ethical concerns associated with the technology have both user- and platform-level effects. Algorithmic bias represents one such ethical problem associated with artificial intelligence technologies. AI requires huge amounts of data to identify user preferences and make suggestions based on them. However, when the algorithms are trained using data that exhibits some inherent bias in society and culture, the algorithms continue to reinforce them (King and Delfabbro,2018). The other significant issue associated with artificial intelligence is the manipulation of user actions. AI is usually geared towards maximizing user engagement, resulting in possible manipulation of users' actions through the system (Vaccari and Chadwick,2020). Through the process of gathering data from the user, AI can analyze the preferences of the user and provide personalized content to keep the user engaged for a longer duration of time. It will definitely benefit the user's experience at the website; but it does involve an ethical issue whereby the platform manipulates its user's behavior through psychology (Verma,2026). These include elements such as fear, curiosity, or seeking rewards. The problem of non-transparency adds to the already existing ethical considerations. Many AI algorithms function as "black boxes" – that is, there is no clear understanding of what goes on inside when an algorithm reaches certain decisions (Espindola,2025). On entertainment websites, a user may be unaware of the logic behind content suggestions or the way personal information is utilized by the site. It creates a significant power discrepancy between the platform provider and its consumers who have little understanding of how the algorithm works (Vorderer and Klimmt,2004).

Table 2: Ethical Issues in AI Entertainment Systems

Ethical Issue	Description
Accountability	It may not be clear when an AI system causes damage to someone's reputation or generates material that may be seen as infringing on intellectual property laws.
Data Privacy	A lot of information on user behavior can be collected by streaming services and content platforms for the sake of building a model.
Filter Bubbles & Algorithmic Bias	Personalized systems can limit access to varied content and further entrench personal biases while preventing artists from gaining new insights.
Lack of Authenticity/Bias	Artificially created content can sometimes be cold, unemotional, or predictable. Moreover, it can continue the biases that exist in the data used for training.
Worker Displacement	Voiceover work, script writing, and the creation of visual effects by AI will deprive human professionals of job opportunities.
Deepfakes & Consent	Voice or acting style manipulation by using artificial intelligence without obtaining permission from the performer, resulting in disinformation and inappropriate use of the information.
Intellectual Property & Authorship	AI is capable of generating new work by learning from existing material owned by humans, raising questions about intellectual property ownership of the generated work.

Source: Compiled by the author based on Thomas,2024

Table 2 shown that some of the ethical issues associated with AI entertainment are privacy invasions, algorithmic biases, deepfakes, addiction, copyright issues, reduction of human creativity, and lack of transparency, accountability and emotional genuineness in online interactions. The issue of transparency is connected with the problem of accountability since it is not clear who is to blame for negative outcomes of using artificial intelligence the developer, the platform, or the system itself when AI algorithms generate misleading content that causes problems (Wanner and et.al.,2022). In this case, it becomes difficult to ensure accountability and implement ethical norms, which leads to the deterioration of relationships between users and AI

systems because people tend not to use platforms that do not satisfy their expectations regarding ethics. The problem of ethics in AI in entertainment becomes extremely important considering the high level of its popularity (Zeng and et.al.,2018).

5.6 Regulatory frameworks and Industry guidelines for safe AI use in entertainment

AI applications in the field of entertainment have increased dramatically, involving technology in various aspects including gaming, online streaming services, social media, and virtual reality. It becomes necessary for there to be rules or regulations governing the use of AI technology within the field of entertainment (Grimmelikhuijsen,2023). This is due to the fact that there are specific matters that should be considered when utilizing technology. Internationally speaking, the EU Artificial Intelligence Act has been recognized as one of the significant legislations. According to this law, AI technologies are classified into four categories, namely: unacceptable, high risk, limited risk, and minimum risk (Felzmann and et.al.,2020). AI technologies deemed harmful by nature would have to meet strict standards to be allowed to operate. In the case of the entertainment industry, the AI act ensures transparency in AI technologies employed in the industry as well as prevents manipulation of any sort. Apart from the legal statutes, there are some guiding principles set by the Ethics Guidelines for Trustworthy AI. This includes issues like openness, accountability, humanity, and non-discrimination. Companies must consider these elements when creating an AI algorithm in order to avoid any form of violation of individual rights. It is common practice for entertainment companies to follow such ethical principles voluntarily (Przybylski and et.al.,2017).

Sri Lanka's regulations on AI-driven gaming technology include the Personal Data Protection Act No. 9 of 2022 and the Online Safety Act No. 9 of 2024. The former ensures protection of user's personal data, while the latter regulates online speech and some types of child abuse (Bopagamage,2026). These regulations set up a general overview of digital safety, but specific safeguarding measures for AI gaming technology, age-based restrictions, design manipulation, and interaction with virtual characters

will need to be woven into these rules. Gaming developers should focus on a privacy-first approach, parental controls, transparent data collection and use, and complaint processes in protecting children (Tennakoon and et.al.,2018).

The Government of India aims to establish its own governance model for the country. The adopted model in India follows the principle-based approach. This approach is backed by the Ministry of Electronics and Information Technology (Ananny and Crawford, 2018). In addition to safety and inclusiveness, transparency and accountability are some of the other key features of the model. While there is no bill regarding AI regulation in India, several legislations have been passed to govern digital platforms. For instance, the Information Technology Act, 2000 has been developed in relation to the criminal justice system, data protection, and intermediaries (Kroll and et.al.,2017). All the conditions set forth in the act shall be relevant to the use of AI in the entertainment sector. Furthermore, according to the Information Technology Rules, any illegal or unethical content must be deleted from digital platforms (Togelius and et.al.,2011).

Industry guidelines are equally essential in safeguarding safety during the use of AI in entertainment. There are many corporations that apply self-regulation mechanisms such as rating the content, limiting the age of the audience, and implementing parental control in order to keep the vulnerable audience from harm, especially children (Cavaioni and et.al.,2026). AI can help in carrying out all these tasks through content moderation and interaction filters. Furthering this aspect of safe AI use are corporate governance policies that require companies to carry out audits and risk assessments, along with impact evaluations, on the AI technology used within an organization (Henriksen-Bulmer and et.al.,2024). Despite the existence of this framework, there are several issues that remain unaddressed. Diverse regulatory approaches adopted by different nations make these laws inconsistent when applied in connection with applications of global entertainment. The rapid advancements in technology also make it difficult for any legal model to be able to catch up with new AI technologies such as generative AI and virtual reality (Raji and et.al.,2020).

5.7 Benefits of immersive AI experiences with potential social and psychological risks

Immersive AI technologies, which involve the use of VR, AR, and intelligent recommendation algorithms, have turned the realm of entertainment into an interactive environment that caters to the specific needs of each consumer (Selbst and et.al.,2019). Although the benefits of such developments are obvious, there are a number of negative social and psychological consequences associated with these technologies that should be considered carefully. First of all, immersive AI technologies provide for improved engagement on the part of consumers (Lee and See,2004). In particular, intelligent AI algorithms can process data about individual consumer preferences, behaviour, and emotional state in order to tailor entertainment products to specific consumer needs. This personal approach to entertaining customers makes the consumption process much more enjoyable and allows for greater customer interaction. Thus, virtual characters will react accordingly to player actions (Yannakakis and Togelius,2018).

Furthermore, from the perspective of education, immersive AI can enable one to simulate real-world scenarios that are helpful in acquiring particular skills. An immersive AI also facilitates inclusivity and accessibility (Hoff and Bashir,2015). Those people who might have some kind of limitation to enter into real environments would find it easy to be active in virtual worlds. For example, people suffering from various disabilities can get involved in such activities where otherwise they would find it very tough, and those who are socially awkward can also interact through digital platforms (Shneiderman,2020).

Another issue associated with data privacy and surveillance is posed by immersive AI technologies. The functioning of immersive AI systems is based on a heavy dependence on the collection and analysis of data related to the behavior, preferences, and other characteristics of users, including their biometrics like face recognition and voice tones (Tokarchuk and et.al.,2024). Consequently, the high level of dependence on data makes it easy to abuse and misinterpret this information, creating a number of privacy issues (Brey,2012). It is essential to recognize that the immersive nature of the environment provided

by AI technologies may become dangerous for the users by offering them inappropriate material. Even with the help of AI moderation, it is possible to provide users with offensive or misleading data. Furthermore, the implementation of AI technology will mean that all the biases or stereotypes embedded in the data used to train the algorithm will be repeated, thus making the decisions taken by the machine biased (Zhu and et.al.,2021). Lastly, some psychological consequences, such as depression and low self-respect, may arise. The continuous comparison of one's self with virtual models or experiences that have been designed to be flawless could result in feelings of inadequacy (Taddeo and Floridi,2018).

5.8 Recommendations for Safe and Responsible Implementation of AI-Powered Gaming

The successful integration of AI-powered gaming depends on a comprehensive strategy that considers technological advancement, player engagement, ethical considerations, and child safety. Developers should focus on child-centred and safety-by-design principles during the development process. This includes implementing age-appropriate content filters, parental controls, and reliable age-assurance systems to limit children's access to violent, sexually explicit, discriminatory, or otherwise harmful material. These protective measures should be reviewed and updated regularly to respond to new risks (Schijven and Kikkawa,2022).

Second, gaming platforms should strengthen privacy protections. Data collected on players should be limited to what is necessary; consent obtained; data practices explained using plain language; and there should be secure options for correcting, deleting, or reviewing personal information. Additional protections should extend to the data of children, who should be protected from unnecessary profiling and targeted advertising. Third, AI gaming developers should enable transparency and accountability. Parents and players should be made aware of AI-generated content, personalised recommendations, automated moderation, or data-driven decisions in plain language; and independent audits should evaluate algorithmic bias, privacy risks, the output of harmful material, and security measures (Hodent and et.al.,2024).

Fourth, gaming companies should avoid manipulative engagement methods, like frequent notifications, exploitative reward systems, and misleading in-game purchases. Measures like spending limits, transparent pricing, parental approval for children's purchases and easy-to-use playtime controls are recommended. Fifth Governments educational institutions, parents, and technology companies should collaborate to set suitable standards, awareness campaigns, and reporting systems (Griffiths,2010). Developers should offer accessible ways to report harmful content, cyber-bullying, harassment, and inappropriate AI interactions. Ongoing risk assessment, user feedback, and regular safety reviews should inform improvements. These steps can help provide creative, engaging, inclusive, and developmentally suitable digital entertainment while safeguarding children's rights, privacy, and psychological health (Boyle and et.la.,2012).

Table 3: SWOT Analysis on AI in Play and Entertainment

Strengths (Internal)	Weaknesses (Internal)
Algorithmic Hyper-Personalization: Algorithms deliver personalized content suggestions, which boost user engagement by 20–30%.	Uncanny Valley Phenomenon: Artificial voices and figures with an odd sensation can disrupt the users' experience and affect their trust in the brands.
Operational Optimization: Automation in video editing, analysis of scripts and VFX rendering saves time and money.	Creative Homogenization: Excessive use of AI in creative processes can produce artificial works devoid of unique human creativity and ingenuity.
Dynamic Adaptive Gaming: The use of AI ensures that game difficulty and NPCs change to make each game experience unique.	High Entry Barriers: Building AI systems and employing qualified workers necessitates large amounts of money.
Opportunities (External)	Threats (External)
Predictive accuracy: Film studios can utilize AI software like ScriptBook and Cinelytic to ensure predictive box office	Risks Associated with Ethical/Regulatory Frameworks: One needs to consider issues related to copyright violations and the

success, reducing financial risks before the start of production.	misuse of deepfakes.
Scalability: With the help of automation in dubbing and translating technologies, content becomes globally accessible and affordable.	Risks of Privacy: More stringent privacy-related regulations globally (like GDPR and CCPA) can constitute risk factors if there is too much use of data by personalized AI applications.
Monetization opportunities: AI-generated virtual influencers and immersive experience opportunities present new avenues for earning profits.	Risk of Digital Inequalities: Indie game studios can have trouble competing with giants of technology, leading to monopolies.

Source: Compiled by the author based on (Skobeltsina et.al.,2021) (Shesterin and Shesterina, 2022)

6. Conclusion

Gaming and entertainment AI can enable rich, unique, and adaptive experiences for gaming and entertainment through adjustable difficulty, character interactions, narrations, and content recommendations. When game developers have access to high levels of data collection, this often means risk for user safety, recommendations that promote a 'gaming addiction', and content that is inappropriate. Personalised content and increased levels of screen time can bring addiction and health risks. Better controls, transparency, and measures to safeguard children and vulnerable groups, ensure less risk of inappropriate content, and safeguards against exploitation of personal data are essential. Developers should use responsible data collection and design practices, and lawmakers should seek to ensure a fair level of regulation so that everyone can safely enjoy gaming experiences.

Some measures have been taken by the governments for ensuring the safety and ethics associated with the use of AI in entertainment. These policies include the EU AI Act that covers aspects such as transparency, risk assessment, and accountability. Also, guidelines for the ethical use of AI and its implications for human beings have been created by the NITI Aayog of India. Moreover, the Digital Personal Data Protection Act 2023 in India will help ensure privacy and security of data. Since there may be clashes between entertainment and safety, the implementation of some

measure related to transparency of how an algorithm impacts the production of content should be considered. It would involve the adoption of human-centric AI. Also, some restrictions in terms of usage could be applied, along with some suggestions about well-being to prevent people from developing addictions. This research was based on secondary sources only and did not involve primary data collection. It should also consider how children interact with these technologies using empirical research. Privacy enhancement, moderation of age-appropriate content, parental controls, transparency of AI governance by developers should be improved, and the long-term impact of AI-based gaming on children should be examined.

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Artificial Intelligence at the Social Crossroads: Psychological Well-Being and Educational Equity in the Digital Age

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Abstract: The rapid integration of Artificial Intelligence (AI) into daily life has created a complex social intersection impacting student mental health and academic access. While AI offers personalized learning, it simultaneously risks widening the digital divide, accelerating socio-economic educational inequities, and inducing psychological issues such as tech-anxiety and cognitive over-reliance. This study investigates how AI deployment influences psychological well-being and shapes educational equity among vulnerable student populations. Bridging tech-centric educational research and human psychology, this study introduces an integrative model analyzing AI not merely as an instructional tool, but as a socio-psychological determinant of educational fairness. Framed by Vygotsky's Socio-Cultural Theory and Self-Determination Theory (SDT), this qualitative research examines primary school to university-level educators, students, and educational psychologists across diverse socio-economic districts in Indonesia (2024–2026). Data were gathered via semi-structured interviews, focus group discussions, and reflective learner logs, then analyzed using Critical Discourse Analysis and thematic coding. Findings reveal that while adaptive AI tools enhance self-efficacy in resource-rich environments, socio-economically disadvantaged students face "algorithmic alienation" due to poor access and inadequate digital literacy, heightening anxiety and reducing intrinsic motivation. AI adoption must move beyond technological optimism to prioritize psychological safety and equitable access, establishing ethical human-AI collaboration in education.

Keywords: Artificial Intelligence, Educational Equity, Psychological Well-Being, Socio-Cultural Theory, Algorithmic Alienation

1. Introduction

The rapid integration of Artificial Intelligence (AI) across primary, secondary, and tertiary educational institutions has initiated a profound shift in global teaching and learning dynamics. Traditional pedagogical models centered on passive information transmission are increasingly displaced by adaptive learning systems, predictive analytics, large language models, and automated feedback loops. Proponents of educational technology emphasize AI's capacity to democratize learning by tailoring instructional pathways to individual student pacing, offering immediate remediation, and lowering administrative burdens for educators. However, the rapid deployment of these algorithms introduces a complex socio-psychological nexus that challenges uncritical technological optimism. Educational access is fundamentally linked to human psychological well-being, cognitive processing, and social equity. As AI systems become central mediators of modern instruction, a distinct division emerges: while well-resourced academic environments leverage AI tools to foster self-directed learning and higher-order critical thinking, socio-economically marginalized populations encounter structural barriers that turn these systems into sources of cognitive overload, alienation, and academic anxiety.

Early implementations of AI in education were driven by the assumption that automated tools inherently act as equalizers. By providing access to virtual tutors and intelligent tutoring systems, researchers posited that students, regardless of background, could receive top-tier academic guidance. Yet this perspective often treats educational technology as an isolated tool, ignoring the socio-economic and psychological contexts in which students operate. Learning is not a purely mechanical input-output process; it is deeply tied to emotional safety, perceived control, and relational trust between learners and educators. When AI platforms are integrated into settings lacking adequate infrastructure or digital literacy, the promised benefits often falter. Instead of empowering learners, opaque automated grading, rigid algorithmic feedback, and unreliable connectivity produce a state of hyper-vigilance and confusion. Students in resource-constrained settings frequently report feeling monitored rather than supported, transforming a tool designed for intellectual growth into an instrument of psychological stress. The

digital divide in education has evolved across three distinct tiers:

- *First-Level Digital Divide*: Focused on physical hardware and connectivity access—such as internet availability and personal computer ownership.
- *Second-Level Digital Divide*: Shifted attention to digital literacy, soft skills, and the capacity of users to effectively navigate web interfaces.
- *Third-Level Digital Divide (The Algorithmic Tier)*: Centers on the capacity to leverage advanced AI models effectively while avoiding algorithmic bias, opaque automated decisions, and cognitive over-reliance.

In the context of this third-level divide, socio-economically disadvantaged students face algorithmic alienation. This psychological phenomenon occurs when learners experience a disconnect from their own educational journey due to automated evaluation systems that do not account for socio-linguistic nuances, institutional context, or individual effort. While privileged students use premium AI tools with high accuracy to streamline routine tasks and deepen critical analysis, marginalized students often depend on restricted, ad-supported, or lower-tier models. This disparity reinforces systemic inequalities: higher-tier access builds academic self-efficacy, whereas lower-tier access induces tech-anxiety and erodes intrinsic motivation. Vygotsky posited that human cognitive development is mediated by cultural artifacts and social interactions. Within modern digital environments, AI software functions as an active mediational artifact rather than a passive conduit. In an ideal setting, adaptive AI provides scaffolding within a student's Zone of Proximal Development (ZPD) the space between what a learner can accomplish independently and what they can achieve with guidance. When properly calibrated, AI tools offer hints, adapt problem difficulty, and reduce cognitive fatigue, allowing students to master complex concepts. However, if the supporting socio-cultural environment comprising skilled teacher guidance, peer collaboration, and reliable infrastructure is absent, the mediation breaks down. The AI tool ceases to scaffold and instead imposes rigid structural barriers that hinder cognitive growth. Self-Determination Theory asserts that human motivation and psychological well-being rely on fulfilling three basic psychological needs: autonomy,

competence, and relatedness. Applying SDT to AI integration reveals how technology impacts intrinsic student motivation:

- *Autonomy Impact:* When AI systems provide transparent choices and flexible learning options, student autonomy increases. Conversely, when automated grading tools or plagiarism detectors operate as black boxes without clear appeal mechanisms, student autonomy is compromised, replacing internal motivation with compliance-driven behavior.
- *Competence Impact:* Real-time adaptive feedback can strengthen perceived competence when it highlights learning progress. However, frequent algorithmic errors, language mismatches, or system failures induce feelings of helplessness and reduce self-efficacy.
- *Relatedness Impact:* Over-reliance on automated tutoring can isolate learners from human instructors and peers. When algorithmically generated evaluations replace human feedback, the emotional bond between student and teacher weakens, reducing overall educational trust.

While educational institutions continue to adopt AI platforms at an accelerated rate, policy and implementation strategies remain predominantly focused on software acquisition, technical infrastructure, and administrative efficiency. There is a noticeable lack of empirical inquiry into the socio-psychological consequences of AI integration among socio-economically diverse student bodies. Specifically, existing literature often overlooks how algorithmic opacity, digital access gaps, and changing teacher-student dynamics influence mental health, cognitive load, and intrinsic motivation. Without a clear understanding of these human factors, AI adoption risks expanding existing socio-economic inequalities and creating environments that induce tech-anxiety and alienation among vulnerable learners.

This study systematically investigates the intersection of AI integration, student psychological well-being, and educational equity across diverse educational settings in Indonesia (2024–2026). The research pursues three specific objectives:

1. Assess how adaptive AI tools affect student experiences of autonomy, competence, and relatedness across different socio-economic backgrounds.
2. Identify the factors that lead to "algorithmic alienation" and tech-anxiety among marginalized student cohorts.
3. Propose an integrative, human-centered pedagogical framework that combines ethical governance, equitable access, and teacher-mediated scaffolding to protect student mental health and promote educational fairness.

Moving beyond traditional studies that evaluate AI purely through learning analytics or technical usability, this research introduces an interdisciplinary framework bridging political economy, educational psychology, and critical technology studies. By conceptualizing AI not merely as an instructional device but as a socio-psychological determinant of educational fairness, this study provides empirical insight into how automated systems alter human agency in developing nations. Through qualitative research across primary, secondary, and tertiary institutions, this work documents the lived experiences of students and educators as they navigate AI adoption. In doing so, it shifts the academic conversation from uncritical technological adoption toward an ethical, human-centered approach to educational technology.

2. Research Methods

2.1. Research Design and Theoretical Framework

This study adopted a qualitative research design to investigate the socio-psychological dimensions of AI deployment. Qualitative inquiry was chosen to capture the complex, lived experiences of students, educators, and educational psychologists across different socio-economic strata. The theoretical architecture combines Socio-Cultural Theory and Self-Determination Theory (SDT). Socio-Cultural Theory conceptualizes AI systems as cultural tools that mediate cognitive development within the Zone of Proximal Development (ZPD). Self-Determination Theory evaluates how AI technology impacts intrinsic motivation by influencing learners' psychological needs for autonomy, competence, and relatedness. Table 1 summarizes the theoretical framework applied to AI integration.

Table 1. Theoretical Framework

Theoretical Framework	Key Authors & Foundations	Core Concepts to AI Integration	Applied to AI
Socio-Cultural Theory	Vygotsky (1978)	• Mediational Role: AI tools acting as cognitive artifacts • Scaffolding: Guidance within the Zone of Proximal Development (ZPD) • Mediated Cognition: Socially and technologically structured learning	
Self-Determination Theory	Ryan & Deci (2000)	• Autonomy: Preservation of learner agency and self-direction • Competence: Building self-efficacy through adaptive feedback • Relatedness: Maintaining human and social connections in learning	

2.2. Participants and Research Subjects

The investigation was conducted across multi-level educational settings in Indonesia over a multi-year timeframe (2024–2026). Participants (\$N = 84\$) were recruited using purposive sampling to ensure balanced representation across socio-economic indicators, institutional tier, and academic role. Details regarding participant distribution are presented in Table 2.

Table 2. Participant Group

Participant Group	Count (n)	Institutional / Socio-Economic Context
Higher Education	32	Urban private universities (\$n=16\$), Rural public universities (\$n=16\$)

Students		
Secondary School Students	24	High-resource metropolitan (\$n=12\$), Low-resource suburban/rural (\$n=12\$)
Educators & STEM Faculty	18	Primary, secondary, and tertiary teaching roles
Educational Psychologists	10	Clinical practitioners and academic counselors

2.3. Data Collection and Analysis Procedure

Data collection utilized three complementary qualitative techniques:

1. *Semi-Structured Interviews:* Conducted individually with educators, psychologists, and tertiary students (45–60 minutes each), focusing on institutional policies, perceived fairness, and emotional responses to AI tools.
2. *Focus Group Discussions (FGDs):* Organized into six distinct sessions categorized by socio-economic group to explore collective peer dynamics, digital access challenges, and classroom experiences.
3. *Reflective Learner Logs:* Maintained by student participants over an eight-week academic cycle, capturing real-time interactions, cognitive fatigue, and anxiety related to automated learning platforms.

Data were analyzed using Critical Discourse Analysis (CDA) alongside inductive thematic coding. Textual transcripts were iteratively coded to map patterns of cognitive load, autonomy, and structural equity barriers.

3. Results and Discussion

3.1. Core Dimensions of AI Deployment
3.1.1. Dual Impact on Learner Autonomy and Self-Efficacy

In resource-rich educational environments, access to adaptive AI tutoring platforms enhanced academic self-efficacy. Students reported that real-time feedback and customizable task difficulty allowed them to regulate their learning pace, satisfying their basic need for competence. However, in low-resource environments, this dynamic inverted: forced interaction with opaque,

automated grading systems without adequate human support diminished perceived agency, leading to cognitive over-reliance and diminished problem-solving confidence.

3.1.2. Algorithmic Alienation and Tech-Anxiety

A prominent finding among socio-economically disadvantaged students was the emergence of algorithmic alienation. This psychological phenomenon occurs when learners feel disconnected from the learning process due to opaque automated evaluations, language/cultural mismatches in AI model design, and inconsistent internet infrastructure. Learners experiencing algorithmic alienation exhibited elevated levels of tech-anxiety, feelings of helplessness, and a degradation of intrinsic motivation. Rather than viewing technology as an empowering mediator, these students perceived AI as an arbitrary monitor. Comparative observations between student cohorts are detailed in Table 3.

Table 3. Core Dimension, Resource-Rich Cohorts, and Socio-Economically Vulnerable Cohorts

Core Dimension	Resource-Rich Cohorts	Socio-Economically Vulnerable Cohorts
Academic Agency & Engagement	- Increased academic agency - Higher intrinsic motivation	- Systemic algorithmic alienation - Cognitive over-reliance
Cognitive & Psychological Impact	- Optimized cognitive load - Effective tool utilization	- High prevalence of tech-anxiety - Eroded learner-instructor trust

3.1.3. Exacerbation of the Structural Digital Divide

While AI platforms are often marketed as equalizers, empirical data indicated that unequal access to high-tier AI software, high-speed connectivity, and digital literacy training widens pre-existing educational gaps. Disadvantaged students frequently relied on free, restricted versions of tools with lower accuracy,

resulting in uneven learning outcomes and reinforcing socio-economic divides.

3.1.4. Relational Friction and Eroded Educational Trust

Automated assessment systems disrupted traditional educator-student relationships. Students reported hesitation in approaching instructors when algorithmic outputs conflicted with their actual effort, fearing that automated metrics would take precedence over human judgment. Educational psychologists noted a corresponding decline in the sense of relatedness within learning communities.

3.2. Theoretical Interpretation and Proposed Pedagogy

3.2.1. Socio-Psychological Determinants

The empirical findings emphasize that AI deployment in educational environments is not a neutral technical upgrade; it is a socio-psychological intervention. When analyzed through Vygotsky's Socio-Cultural perspective, AI acts as an active cultural mediator. If the socio-cultural infrastructure comprising teacher guidance, technological access, and digital literacy is fragile, the tool fails to scaffold learning within the Zone of Proximal Development. Instead, it creates cognitive overload and emotional distress.

From the perspective of Self-Determination Theory (Ryan & Deci, 2000), educational equity depends on fulfilling basic psychological needs:

When algorithmic opacity reduces a student's perceived autonomy, or when unequal access diminishes their sense of competence relative to peers, psychological well-being declines. This drop in well-being directly impedes academic engagement.

3.2.2. Human-Centered AI Pedagogy Framework

To prevent AI from deepening educational inequality, institutions must move away from uncritical adoption of technology. Mitigating algorithmic alienation requires human-centered AI pedagogy one that integrates ethical transparency, equitable infrastructure distribution, and active educator involvement to

safeguard student mental health and educational access. Table 4 outlines the core pillars of this framework.

Table 4. Core Pillar, Focus Area, and Pedagogical Objectives

Core Pillar	Focus Area	Pedagogical Objectives
Ethical AI Governance	Systems & Policy	Ensures algorithm transparency, protects student data privacy, and enforces human oversight in automated evaluations.
Inclusive Access Infrastructure	Equity & Resources	Eliminates the digital divide by guaranteeing equal technological access, hardware availability, and digital literacy support.
Teacher-Mediated Scaffolding	Human Pedagogy	Re-anchors educators as active facilitators who guide AI interactions to preserve student autonomy and psychological well-being.

4. Conclusion

Artificial Intelligence stands at a critical social crossroads in modern education. While adaptive systems and predictive analytics offer unprecedented opportunities for personalized instruction, academic self-efficacy, and pedagogical transformation, their uncritical deployment risks exacerbating pre-existing socio-economic divides. Grounded in Vygotsky’s Socio-Cultural Theory and Ryan and Deci’s Self-Determination Theory, this qualitative investigation demonstrates that AI adoption is not merely a technical upgrade, but a profound socio-psychological intervention that restructures student motivation, cognitive processing, and educational equity. The findings highlight a stark disparity between resource-rich and marginalized learning environments. In well-resourced contexts, adaptive platforms scaffold learning within the Zone of Proximal Development, strengthening autonomy and competence. Conversely, in socio-economically vulnerable contexts, structural access gaps, algorithmic opacity, and restricted software tiers induce "algorithmic alienation" a psychological phenomenon characterized by tech-anxiety, cognitive over-reliance, diminished intrinsic

motivation, and eroded relational trust between learners and educators. When automated evaluations replace human feedback without adequate socio-cultural infrastructure, students perceive technology as an arbitrary monitor rather than an empowering tool.

To prevent AI from deepening educational inequalities, policy-makers, institutional leaders, and technology developers must abandon pure technological optimism in favor of a human-centered AI pedagogy. Achieving educational fairness requires a tripartite approach:

1. *Ethical AI Governance:* Establishing transparent, bias-free, and human-in-the-loop assessment models that safeguard student privacy and preserve learner agency.
2. *Inclusive Access Infrastructure:* Guaranteeing equitable distribution of high-tier software, hardware, reliable connectivity, and comprehensive digital literacy programs across all socio-economic strata to eliminate the third-level digital divide.
3. *Teacher-Mediated Scaffolding:* Re-anchoring educators as active relational guides who mediate AI tools, safeguard psychological well-being, and foster meaningful human collaboration.

Ultimately, educational technology must serve as a catalyst for human flourishing rather than a surrogate for human instruction. Prioritizing psychological safety alongside equitable access ensures that the digital evolution empowers every learner, regardless of socio-economic background.

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AI Tools in Classroom Teaching: Experiences of Pre-Service Teachers during School Internship

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Abstract: This study explores the lived experiences of B.Ed. pre-service teachers using Artificial Intelligence (AI) tools during school internship. Although research increasingly examines AI adoption, ethical concerns, teacher readiness, and digital competence, comparatively less attention has been given to what pre-service teachers experience when AI is used in real school classrooms. An interpretive phenomenological orientation was used with eight fourth-semester B.Ed. students purposively selected from two Indian universities. Semi-structured interviews containing 15 questions were analysed through systematic coding and thematic interpretation. Findings indicate three broad patterns of AI use: Content Generation, language Focused, and Interactive Learning Tools. Participants perceived AI as useful for Lesson Organization and Delivery, Student Engagement and Motivation, Communication and Inclusivity, and Confidence and Professional Growth. They also described Technical and Infrastructural Constraints, Accuracy and Reliability Concerns, Ethical and Pedagogical Risks, and Lack of Support & Resistance. The study interprets these experiences through the Technology Acceptance Model (TAM), showing that perceived usefulness is shaped by contextual conditions. The findings suggest that teacher education should move beyond general AI awareness toward guided, ethical, context-sensitive preparation combining technological competence with verification, pedagogical judgement, and institutional support.

Keywords: Artificial Intelligence (AI), Pre-service teachers, AI in education, Classroom teaching, School internship, Technology Acceptance Model

1. Introduction

Artificial Intelligence (AI) has moved from being primarily a technological concern to becoming an increasingly visible part of educational practice. AI, broadly understood as computational systems capable of performing tasks associated with human intelligence, has increasingly entered educational practice (Russell & Norvig, 2021). AI-supported systems can generate instructional materials, provide language support, facilitate interactive activities, assist assessment, and offer forms of personalization. At the same time, the growing presence of generative and conversational AI has created questions about accuracy, academic integrity, over-reliance, teacher agency, equity, and institutional preparedness. Saltman (2022) draws attention to the broader implications of digital technologies for knowledge and educational practice, while systematic reviews have shown that AI applications in education have expanded across teaching, learning, assessment, and institutional functions (Forero Corba & Negre Bennasar, 2023; Zawacki-Richter et al., 2019). Thus, the educational significance of AI cannot be reduced to whether a tool is available, it also concerns how teachers interpret, negotiate, and pedagogically use that tool.

Teacher education is a particularly important setting in which these questions should be examined. Pre-service teachers are developing pedagogical identities while simultaneously learning to work within the practical constraints of schools. Their school internship is therefore different from a classroom discussion about educational technology. During internship, pre-service teachers have to prepare lessons, respond to learners, communicate with mentors, select instructional materials, manage time, and make immediate pedagogical decisions. When AI tools enter this environment, the technology becomes part of an emerging professional practice rather than simply an object of theoretical discussion. The experiences of pre-service teachers can consequently reveal how technological possibilities are translated or not translated into classroom action.

Recent scholarship suggests that educators see considerable potential in AI for lesson planning, individualized support, digital literacy, communication, and creative production, but they also report concerns related to ethics, authenticity, trust, accuracy, institutional readiness, and infrastructure (Bobrytska et al., 2024; Woodruff et al., 2023; Yue et al., 2024). Studies of conversational and generative AI further suggest that AI can alter patterns of interaction and

learning while requiring meaningful human guidance (Ji et al., 2023). The literature also indicates that teachers' technological competence and attitudes are connected: digital competence can shape attitudes toward AI, while concerns about anxiety and trust can influence willingness to adopt AI-supported systems (Galindo Dominguez et al., 2024; Hopcan et al., 2024; Wang et al., 2024). These findings point to a central issue: acceptance of AI is not simply a matter of technical functionality but is embedded in teachers' perceptions and professional contexts.

The Indian school-internship context makes this issue particularly important. Pre-service teachers may encounter differences in school infrastructure, internet connectivity, access to smart devices, institutional expectations, mentor attitudes, and classroom diversity. Research from underrepresented contexts similarly indicates that educational technology cannot be separated from cultural, institutional, and technological conditions (Itmazi & Khlaif, 2022). The school internship therefore provides a situated context in which the usefulness and limitations of AI become visible through actual pedagogical encounters.

The present study addresses this problem by examining the lived experiences of eight B.Ed. pre-service teachers who had completed their school internship. The purpose is not to establish that AI objectively improves teaching or learning. Rather, the study seeks to understand how participants experienced AI-supported teaching, what types of tools they used, what usefulness they attributed to those tools, and what challenges shaped their use. This distinction is important because the evidence is experiential and interpretive.

The study is guided by the Technology Acceptance Model (TAM). TAM provides a useful conceptual lens because perceived usefulness and perceived ease of use help explain why users accept or reject technologies. More recent applications of technology-acceptance frameworks have extended attention to trust, anxiety, teaching efficacy, and other contextual factors (Wang et al., 2024; Zhang & Wareewanich, 2024). In the present study, TAM is not treated as a statistical model to test causal relationships. Instead, its constructs inform the interview questions and provide a sensitizing framework for interpreting how usefulness, effort, trust, concerns, and contextual barriers appeared in participants' narratives.

A further rationale for the study emerges from the distinction between general attitudes toward AI and situated experiences of AI. Existing research has examined teachers' perceptions, policy frameworks, ethical issues, digital competence, and AI applications across educational settings. However, comparatively fewer studies focus specifically on pre-service teachers while they are undergoing school internship and teaching real pupils. This gap matters because the internship is the point at which pre-service teachers begin to translate pedagogical knowledge into professional action. Understanding their experiences can therefore contribute to teacher education curricula, internship supervision, and institutional planning for responsible AI use.

1.1. Research Questions

RQ1. What are the AI tools that pre-service teachers use the most in classroom teaching during their school internship?

RQ2. How do pre-service teachers perceive the usefulness of AI tools in classroom teaching during their school internship?

RQ3. What challenges do pre-service teachers perceive regarding the use of AI tools in classroom teaching during their school internship?

1.2. Theoretical Framework

The Technology Acceptance Model (TAM) provides the theoretical lens for interpreting participants' experiences. TAM emphasizes perceived usefulness and perceived ease of use as central determinants of technology acceptance. In this study, perceived usefulness is reflected in participants' descriptions of lesson organization, engagement, communication, and confidence, while effort, trust, infrastructure, and institutional response are considered contextual conditions shaping use (Wang et al., 2024). The phenomenological design complements TAM by examining how these constructs are experienced in actual school settings rather than statistically testing relationships among them. Thus, TAM informed the interview protocol, sensitized the coding process, and supported interpretation without functioning as a rigid deductive coding framework.

2. Literature Review

2.1. AI in Education and Teacher Practice

Research on AI in education presents a dual picture of opportunity and constraint. AI-supported systems can assist teachers with planning, assessment, content generation, personalization, and language-related tasks, but their educational value depends on the quality of human oversight and the context in which they are used. Galindo Dominguez et al. (2024) synthesized research on the promises and challenges of AI for teachers and emphasized that teacher-related factors remain central to successful adoption. Forero Corba and Negre Bennasar (2023) similarly reviewed applications of machine learning and AI in education, illustrating the breadth of technological possibilities while also reinforcing the importance of educational context. Zhang and Aslan (2021) describe AI technologies as an expanding research area whose future directions require continued attention to pedagogical application.

The literature on generative AI adds another layer to this discussion. Firat (2023) considers conversational educational agents as part of a significant shift in educational interaction, while Rahman and Watanobe (2023) identify both opportunities and threats associated with ChatGPT in education and research. Garcia Castro et al. (2024) examined ChatGPT in basic education and highlighted both advantages and disadvantages in school-related tasks. Hamarma et al. (2024) likewise examined generative AI use in a university context, illustrating the importance of understanding how users negotiate technological possibilities and concerns rather than assuming that adoption is automatically beneficial. Khalil et al. (2025) further indicate that assessment practices may need redesign in response to AI-enhanced learning environments.

These studies collectively suggest that AI use is best understood as a pedagogical practice rather than a purely technical act. The value of an AI tool depends on the task for which it is used, the user's ability to evaluate the output, the expectations of the institution, and the degree of human guidance. This perspective is particularly relevant to pre-service teachers, whose pedagogical judgement is still developing.

2.2. Teacher Readiness and Professional Learning

Teacher readiness is closely associated with digital competence and attitudes toward AI. Galindo Dominguez et al. (2024) examined the relationship

between teachers' digital competence and attitudes toward AI, reinforcing the importance of teachers' knowledge and confidence. Uygun (2024) similarly examined teachers' perspectives on AI in education and highlighted the need to consider teachers' practical views when discussing implementation. Yue et al. (2024) focused on K–12 teachers' technological pedagogical content knowledge readiness and attitudes toward AI education, demonstrating that AI readiness is not merely technical; it is related to teachers' capacity to integrate technology with content and pedagogy.

Research focusing on pre-service teachers also identifies affective and professional dimensions. Hopcan et al. (2024) examined AI anxiety and machine-learning attitudes among teacher candidates, indicating that emotional responses can shape technology-related orientations. Zhang and Zhang (2024) discuss AI in teacher education in relation to teaching support, inclusive learning, and digital literacy. Zakariya et al. (2024), although situated in blended learning rather than AI specifically, provide a useful contextual reminder that pre-service teachers' technology experiences are shaped by both affordances and constraints. Such findings support the need to examine what pre-service teachers actually experience during field-based practice.

2.3. Technology Acceptance Model as an Interpretive Lens

TAM was originally developed to explain technology acceptance through constructs including perceived usefulness and perceived ease of use. The model has subsequently been extended and applied across educational technology contexts. Venkatesh et al. (2003) broadened technology-acceptance research through the Unified Theory of Acceptance and Use of Technology, while Saltman (2022) review the development and continued relevance of TAM. Wang et al. (2024) demonstrate how technology acceptance can be extended by considering teaching efficacy, goal orientation, anxiety, and trust. Zhang and Warewanich (2024) similarly identify factors influencing teachers' willingness to use generative AI.

For a phenomenological study, TAM should not be used as a rigid coding template that forces participants' accounts into predetermined categories. Instead, TAM can operate as a sensitizing framework. Perceived usefulness can help interpret participants' descriptions of improved organization, engagement, communication, and confidence. Ease of use and contextual conditions

can help interpret technical difficulties and the practical effort required to use AI. Trust-related issues can illuminate concerns about accuracy and reliability. Ethical concerns and institutional resistance can then be considered as contextual conditions that shape whether perceived usefulness is translated into actual classroom use.

This approach also responds to an important limitation in technology-acceptance research. Acceptance models may explain intention or use, but they do not always capture the texture of lived experience: uncertainty before a lesson, the need to verify an AI response, the reaction of pupils, the attitude of a mentor, or the frustration created by weak connectivity. A phenomenological account can complement TAM by showing how acceptance is experienced in practice.

2.4. Ethical and Institutional Concerns

Ethical concerns are a recurring part of the AI-in-education literature. Holmes et al. (2022) call for a community-wide framework for the ethics of AI in education, highlighting issues that include fairness, accountability, transparency, and human responsibility. Farazouli (2024) similarly approaches automated assessment through relational ethics, emphasizing that automation cannot be separated from educational relationships and responsibilities. Khalil et al. (2025) argues for professional knowledge that supports ethical integration of AI-based tools.

Concerns about over-reliance are also relevant. Zhai et al. (2024) reviewed the effects of over-reliance on AI dialogue systems and raised concerns about possible effects on cognitive abilities. The concern expressed by participants in the present study about dependence on AI therefore reflects a wider debate about whether technological convenience may displace independent thinking. Firat (2023) and Koroleva and Jomezai (2024) also illustrate that generative AI can generate enthusiasm alongside apprehension among educational stakeholders.

Policy and institutional support establish another layer. Some studies propose a comprehensive AI policy education framework, suggesting that responsible implementation requires institutional structures rather than individual enthusiasm alone. Kusal et al. (2022) review conversational AI and point toward the continuing evolution of AI-supported interaction. Sadykov et al. (2023), although focusing on programmed learning in science education, also demonstrate the continuing importance of structured

instructional design when technology is introduced into educational practice. Together, these studies indicate that the institutional environment matters: teachers require guidance, policies, infrastructure, and opportunities to develop judgement.

2.5. Research Gap

The reviewed literature establishes that AI is increasingly relevant to teaching, that teacher readiness and attitudes influence adoption, and that ethical and institutional concerns complicate implementation. Yet three limitations remain visible. First, many studies examine teachers or students broadly rather than pre-service teachers at the point of school internship. Second, much of the literature emphasizes perceptions, attitudes, or technological frameworks without reconstructing the lived experience of using AI in real classroom situations. Third, technology acceptance and phenomenological inquiry are not often brought together to explain how perceived usefulness, trust, anxiety, infrastructure, and institutional conditions are experienced simultaneously.

The present study addresses this gap through an interpretive phenomenological reading of internship experiences. It contributes a situated account of AI use by pre-service teachers from two Indian universities and uses TAM as a sensitizing framework rather than as a quantitative predictive model. The focus on actual school-internship experiences is particularly important because it reveals not only which tools were used but why they were used, what participants believed those tools enabled, and what prevented their consistent or confident use

3. Methodology

3.1. Research Design and Phenomenological Orientation

The study adopted a phenomenological design to explore the lived experiences of pre-service teachers using AI tools during school internship. In the revised methodological framing, the study follows an interpretive or hermeneutic phenomenological orientation because the purpose is not merely to catalogue events but to understand how participants interpreted the meaning and usefulness of AI within their emerging teaching practice. Phenomenological inquiry is appropriate when a study seeks to understand how individuals experience a shared phenomenon in a particular context (Creswell & Creswell, 2017).

The phenomenon investigated was the use of AI tools in classroom teaching during school internship. The focus therefore remained on participants' descriptions of actual teaching-related encounters rather than on hypothetical attitudes toward AI. The interpretive orientation also provides a logical connection with thematic analysis: participant statements were examined for recurring meanings, grouped into thematic patterns, and interpreted in relation to the practical context of internship and the sensitizing concepts of TAM.

3.2. Participants and Sampling

Eight fourth-semester B.Ed. pre-service teachers participated in the study. Four participants were purposively selected from Baba Saheb Ambedkar Education University, Kolkata, West Bengal, and four from Central University of Jharkhand, Ranchi. Each university contributed two male and two female participants. Fourth-semester students were selected because the internship had been completed in the preceding semester, allowing participants to reflect on classroom experiences after returning from the field.

Purposive sampling was used because the study required participants who had direct experience of using AI tools during school internship. The inclusion criteria were therefore: being enrolled in the B.Ed. programme, having completed the school internship, having used at least one AI-supported tool in classroom teaching during the internship, and being able to describe those experiences in an interview. Participants without direct internship-based experience of AI use were not part of the intended sample. The study deliberately sought information-rich cases rather than statistical representation.

The sample of eight is consistent with the intensive character of phenomenological inquiry, in which the quality and relevance of participants' experiences are more important than numerical size. At the same time, the findings should not be interpreted as representative of all Indian pre-service teachers. The two-university context and small sample provide contextual depth but place clear limits on transferability.

3.3. Theoretical Integration of TAM

TAM informed the interview protocol, coding, and interpretation at three levels. First, perceived usefulness guided questions about whether AI helped participants organize lessons, communicate with learners, engage students, or develop confidence. Second, ease-of-use

and effort-related considerations sensitized the analysis to practical difficulties, including connectivity and equipment. Third, extensions of TAM that consider trust, anxiety, teaching efficacy, and contextual influences informed interpretation of participants' concerns about accuracy, dependence, and institutional support (Wang et al., 2024).

TAM was not imposed as a deductive coding system. The first stage of analysis remained open to participants' own descriptions. TAM was then used to interpret how emerging themes related to technology acceptance. This distinction is important because the study's purpose was phenomenological rather than predictive.

3.4. Data Analysis

The analysis combined phenomenological interpretation with thematic analysis. First, the interview responses were organized and prepared for analysis. Second, responses were rearranged question by question to facilitate cross-participant comparison. Third, open coding was used to identify meaningful units, including planning, creativity, confidence, engagement, connectivity, accuracy, ethics, and support. Fourth, axial coding connected related codes with the three research questions. Finally, selective coding was used to identify broader narratives.

This procedure produced a two-level analytic structure. At the descriptive level, the analysis identified what participants said they used, what they considered useful, and what challenges they encountered. At the interpretive level, the analysis examined how these experiences reflected perceived usefulness, contextual effort, trust, professional confidence, and constraints on acceptance. The approach therefore retained the phenomenological emphasis on lived experience while using thematic organization to make the eight accounts analytically visible.

The percentages reported for RQ1 and RQ2 are not prevalence estimates. Participants could contribute to more than one theme, and the counts represent coded mentions or participants represented within a theme. Consequently, percentages are used only to display the distribution of coded thematic references and should not be read as quantitative evidence of population-level frequency. RQ3 is presented primarily through a percentage distribution, however, the original evidence for the institutional-support theme overlapped with ethical concerns.

3.5. Ethical Considerations

Participant identities were protected through the use of labels such as P1 to P8 rather than names. The manuscript also treats participants' accounts as confidential qualitative material.

Table 1. Participant characteristics

Participant	Gender	University
P1	Male	Baba Saheb Ambedkar Education University
P2	Male	Baba Saheb Ambedkar Education University
P3	Female	Baba Saheb Ambedkar Education University
P4	Female	Baba Saheb Ambedkar Education University
P5	Male	Central University of Jharkhand
P6	Male	Central University of Jharkhand
P7	Female	Central University of Jharkhand
P8	Female	Central University of Jharkhand

Table 2. Themes identified across the research questions

Research question	Identified themes
RQ1	Content Generation tools, Language Focused Tools, Interactive Learning Tools
RQ2	Enhanced Lesson Delivery and Organization, Student Engagement and Motivation, Improved Communication and Inclusivity, Confidence and Professional Growth
RQ3	Technical and Infrastructural Barriers, Accuracy and Reliability Concerns, Ethical and Pedagogical Concerns, Institutional Support and Resistance

Table 3. Illustrative coding framework

Illustrative participant statement	Analytic focus	Theme
"I primarily used ChatGPT and Google Bard." (P1)	AI tool use	Content Generation Tools
"I relied on Grammarly and Quillbot." (P2)	AI tool use	Language Focused Tools
"Students loved competing in an AI-generated quiz." (P3)	AI tool use	Interactive Learning Tools
"Students loved competing in an AI-generated quiz." (P3)	Perceived usefulness	Enhanced Lesson Delivery and Organization
"Designing a poster on environmental awareness fascinated students." (P5)	Perceived usefulness	Student Engagement and Motivation
"Grammarly corrected my speech... students appreciated the clarity." (P2)	Perceived usefulness	Improved Communication and Inclusivity
"Using AI boosted my confidence." (P1)	Perceived usefulness	Confidence and Professional Growth
"Poor Wi-Fi and lack of smartboards limited my ability." (P1)	Challenges	Technical and Infrastructural Barriers
"Some answers didn't match textbook standards." (P3)	Challenges	Accuracy and Reliability Concerns
"I worried that students might become dependent on AI." (P1)	Challenges	Ethical and Pedagogical Concerns
"Senior teachers doubted AI's reliability." (P1)	Challenges	Institutional Support and Resistance

4. Findings

4.1. AI Tools Used During Internship

RQ1 asked what AI tools pre-service teachers used most during school internship. Three themes emerged: Content Generation Tools, Language Focused Tools,

and Interactive Learning Tools. The themes describe functional categories rather than mutually exclusive tool types because some tools could support more than one pedagogical purpose.

Content Generation Tools

Content-generation tools were the most prominent pattern in the accounts. Six participants referred to this category. Participant 1 explained, "I primarily used ChatGPT and Google Bard. ChatGPT was my go-to for generating lesson outlines, while Bard helped me refine explanations." Participant 5 connected AI use with visual creativity: "Canva AI and ChatGPT... designing a poster on environmental awareness fascinated students." Participant 6 described the use of Bard and Perplexity AI for literature-related content, while Participant 8 mentioned Grammarly, Canva AI, and ChatGPT for charts, posters, and notes.

These accounts suggest that content generation was attractive because it reduced the time and effort required to prepare teaching materials and offered multiple ways of presenting a topic. Importantly, participants did not describe AI as replacing their teaching role. Their accounts show AI being used as a preparatory and supportive resource for lesson outlines, explanations, visual materials, and examples. The lived experience therefore involved a form of mediated preparation in which AI-generated content was brought into classroom practice after being selected or adapted by the pre-service teacher.

Language Focused Tools

Three participants referred to language-focused tools. Participant 2 stated, "I relied on Grammarly and Quillbot. Grammarly helped me correct grammar errors, while Quillbot assisted in paraphrasing complex texts." Participant 4 reported using Microsoft Copilot and Google Translate and explained that translating science lessons into Hindi helped students feel "included and valued."

The accounts indicate that language support was experienced not only as correction but also as a means of negotiating classroom diversity. For pre-service teachers working in multilingual settings, translation and language refinement could reduce communication difficulty. At the same time, the later findings on accuracy show that participants did not consider language outputs automatically reliable. Thus, usefulness and verification appeared together in the experience of using AI.

Interactive Learning Tools

Two participants described interactive AI-supported learning activities. Participant 3 recalled, “Students loved competing in an AI-generated quiz. Their excitement showed me how motivating technology can be.” Participant 7 similarly mentioned ChatGPT and Quizizz AI and observed that students enjoyed AI-generated quizzes.

The significance of this theme lies less in the number of participants and more in the type of classroom experience described. Interactive tools appeared to change the participation pattern of lessons by introducing competition, gamification, and immediate activity. The accounts suggest that pre-service teachers interpreted learner excitement as a sign of engagement, although the study did not independently measure student engagement. Figure 1 therefore presents the distribution as coded thematic references rather than as an objective measure of tool effectiveness.

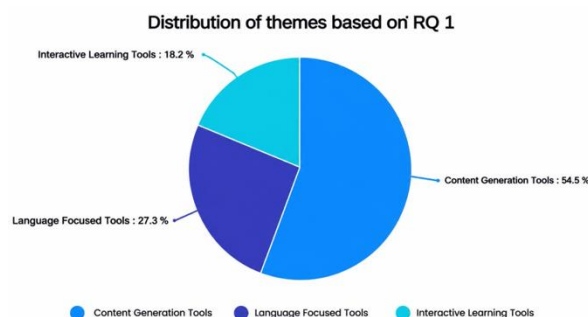


Figure 1. Distribution of coded AI-tool-use themes for RQ1.

4.2. Perceived Usefulness of AI Tools

RQ2 explored how pre-service teachers perceived the usefulness of AI tools. Four themes were identified: Enhanced Lesson Delivery and Organization, Student Engagement and Motivation, Improved Communication and Inclusivity, and Confidence and Professional Growth.

Enhanced Lesson Delivery and Organization

This was the recurring perception among the participants. It was found that four out of eight participants emphasized upon this theme. AI tools were perceived as very helpful in developing lessons, breaking down complex topics and secure logical sequencing. Participant 1 noted, “AI tools helped me break down lessons into clear steps, ensuring I didn’t miss important points.” Similarly, Participant 3 explained, “AI suggested structured lesson plans with

clear objectives, which made my teaching more systematic.” Participant 6 emphasized efficiency, “AI helped summarize lessons concisely,” while Participant 7 added, “AI suggested step-by-step strategies.”

These accounts suggest that perceived usefulness was closely related to organization. Participants appeared to value AI when it transformed a broad teaching task into smaller, more manageable components. For pre-service teachers who were still developing lesson-planning expertise, this form of support may have reduced uncertainty. The interpretation, however, remains experiential: participants perceived AI as helping them organize lessons, the study did not objectively evaluate lesson quality.

Student Engagement and Motivation

This was another key theme that was found from the responses of pre-service teachers. Again, four out of eight participants emphasized on this theme in their responses. In this regard, participants mirrored regarding how AI served as a tool of creativity and interactivity into real classroom settings. Participant 3 recalled, “Students loved competing in an AI-generated quiz. Their excitement showed me how motivating technology can be.” Participant 5 shared, “Designing a poster on environmental awareness fascinated students.” Participant 7 emphasized, “Students enjoyed AI-generated quizzes,” while Participant 8 added, “Canva helped design a colourful chart for geography that fascinated students.”

Across these accounts, AI was experienced as a resource for introducing novelty, visuality, interaction, and competition. The participants’ descriptions are consistent with literature emphasizing the potential of conversational and generative AI to support interaction and creativity when human teachers guide its use (Garcia Castro et al., 2024; Ji et al., 2023). Nevertheless, because students were not directly interviewed or assessed, the present finding should be understood as pre-service teachers’ perception of student engagement.

Improved Communication and Inclusivity

This theme was least explored themes by the participants and mainly emphasized by those participants who used Language focused tools in classroom teaching during their internship. Only three out of eight participants talked about this theme. Participant 2 stated, “Grammarly corrected my speech for an English lesson. The students appreciated the

clarity.” Participant 4 explained, “Translating science lessons into Hindi made students feel included and valued.” Participant 8 also noted, “Created charts, posters, and corrected notes.”

This theme shows how AI was experienced as a bridge across language and presentation difficulties. The finding is especially meaningful in diverse classrooms, where pre-service teachers may need to adjust explanations for learners with different linguistic resources. However, the accuracy concerns reported under RQ3 demonstrate that translation and language generation were not treated as infallible. The usefulness of AI therefore depended on the teacher's ability to review and contextualize its output.

Confidence and Professional Growth

This particular theme was most recurring theme highlighted by the participants. six out of eight participants emphasized upon this theme. It was an important theme because confidence acts as a huge aspect in teaching that provides a boost in professional growth later on. Participant 2 added, “I felt more confident presenting error-free materials.” Participant 4 emphasized, “AI boosted my confidence in teaching diverse classrooms.” Participant 5 noted, “AI increased my confidence in creativity.” Participant 6 reinforced, “AI boosted my confidence in literature teaching,” and Participant 7 concluded, “Boosted confidence in interactive teaching.”

The accounts suggest that AI use was experienced as a form of professional scaffolding. Participants did not merely describe obtaining information; they described feeling better prepared to enter classroom interactions. This interpretation aligns with research that connects AI-related experiences with teacher attitudes, competence, and anxiety (Galindo Dominguez et al., 2024; Hopcan et al., 2024). Yet the evidence should not be interpreted as proof that AI objectively increased professional competence. The finding concerns participants' perceived confidence during internship.

Figure 2. Distribution of coded perceived-usefulness themes for RQ2.

4.3. Challenges in Using AI Tools

RQ3 identified four areas of difficulty: Technical and Infrastructural Barriers, Accuracy and Reliability Concerns, Ethical and Pedagogical Concerns, And Lack of Institutional Support and Resistance.

Technical and Infrastructural Barriers

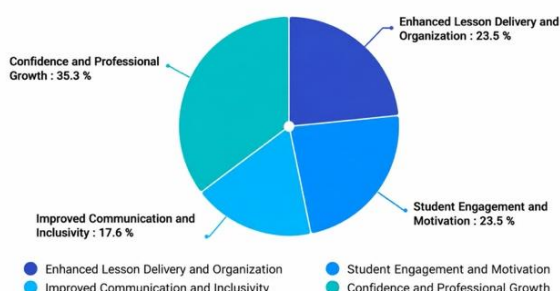
This is one of the most recurring themes that was mentioned by the participants. Technological and infrastructural barriers play a significant role in order to apply AI tools in classroom teaching for pre-service teachers, particularly during their school internship. Participant 1 shared, “Poor Wi-Fi and lack of smartboards limited my ability to use AI effectively.” Participant 2 noted, “The computers in the lab were outdated, which made usage difficult.” Participant 3 added, “Poor Wi-Fi and outdated projectors limited my use of AI.” Participant 4 explained, “Frequent electricity failures disrupted my use of AI.” Participant 5 highlighted, “Limited access to colour printers restricted my creativity.” Participant 6 stated, “Lack of smartboards limited my use of AI.” Participant 7 mentioned, “Low bandwidth issues,” while Participant 8 concluded, “Outdated hardware.”

These accounts demonstrate that technology acceptance was inseparable from material conditions. A pre-service teacher may perceive an AI tool as useful but still be unable to use it consistently when internet access, electricity, hardware, or classroom display facilities are unreliable. This finding supports the wider literature that treats facilitating conditions as an important part of educational technology adoption (Galindo Dominguez et al., 2024; Woodruff et al., 2023).

Accuracy and Reliability Concerns

This has become another essential theme, as pointed out by all the participants. When teachers start using technology in educational instruction, accuracy and reliability become a key concern. This is because, if technology fails to provide accurate information, then the teaching and learning process will affect. Participant 1 explained, “AI-generated facts were sometimes inaccurate. I had to cross-check with textbooks.” Participant 2 noted, “AI sometimes suggested synonyms that didn't fit the context.” Participant 3 shared, “Some answers didn't match textbook standards.” Participant 4 added, “Some translations were inaccurate, which confused students.”

Distribution of Themes based on RQ 2



Participant 5 stated, “Some facts were inaccurate, which required cross-checking.” Participant 6 reinforced, “I had to cross-check with syllabus materials.” Participant 7 mentioned, “Some answers were incorrect,” while Participant 8 concluded, “Some content lacked authenticity.”

The importance of this theme is that verification became part of the participants' lived experience of AI use. AI did not simply save time, it also introduced a new responsibility to evaluate its outputs. In classroom contexts, this responsibility is particularly significant because an inaccurate answer can be transmitted to multiple learners. The finding is consistent with broader concerns about the limitations and risks of generative AI (Rahman & Watanobe, 2023; Zhai et al., 2024).

Ethical and Pedagogical Concerns

Whenever AI is used in the context education, it is seen that some of the ethical concerns may arise regarding the honest application of AI tools in classroom teaching. This is another important theme, that was talked about all eight participants. Participant 1 worried, “Students might become dependent on AI rather than developing their own critical thinking.” Participant 2 added, “I worried about over-reliance on AI for writing.” Participant 3 expressed concern about fairness, “I was concerned about fairness in AI-generated quizzes.” Participant 4 noted, “I worried about authenticity of learning when students relied too much on translated notes.” Participant 5 emphasized, “I worried about plagiarism.” Participant 6 stated, “I worried about losing creativity.” Participant 7 added, “Worried about biased information,” and Participant 8 concluded, “Worried about students memorizing AI notes without thinking.”

These accounts show that participants did not interpret usefulness as equivalent to unrestricted use. Instead, the usefulness of AI was bounded by a concern for learner autonomy, fairness, originality, and critical thinking. This finding resonates with ethical frameworks emphasizing human responsibility in AI-supported education (Holmes et al., 2022; Farazouli, 2024) and with concerns about over-reliance on AI dialogue systems (Zhai et al., 2024).

Lack of Support and Resistance

This theme has proven to be another barrier that pre-service teachers felt in classroom teaching while school internship. To present AI integration in classroom, it is important to have sufficient support and resistance from

different stakeholders associated with it. This theme was also pinpointed by all 8 participants. Participant 1 worried, “Students might become dependent on AI rather than developing their own critical thinking.” Participant 2 added, “I worried about over-reliance on AI for writing.” Participant 3 expressed concern about fairness, “I was concerned about fairness in AI-generated quizzes.” Participant 4 noted, “I worried about authenticity of learning when students relied too much on translated notes.” Participant 5 emphasized, “I worried about plagiarism.” Participant 6 stated, “I worried about losing creativity.” Participant 7 added, “Worried about biased information,” and Participant 8 concluded, “Worried about students memorizing AI notes without thinking.”

The theme should therefore be interpreted cautiously. The available evidence supports a perception of limited confidence or support among some senior teachers, but it does not justify a broad claim that schools generally resist AI. For a pre-service teacher, however, even localized scepticism can matter because internship teaching takes place within a supervisory structure. Mentor expectations can affect whether an innovative tool is encouraged, questioned, or avoided.

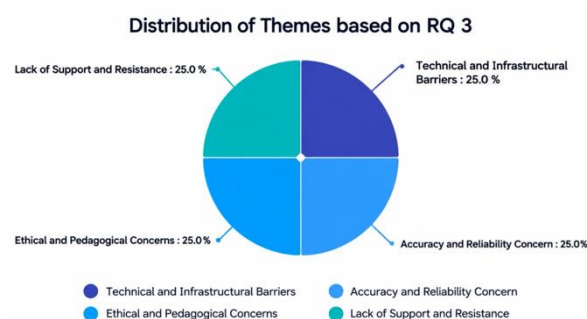


Figure 3. Distribution among challenges experienced during AI use.

5. Discussion

5.1. Interpreting AI use through TAM

The findings indicate that pre-service teachers' AI use was driven primarily by practical classroom purposes. Content Generation Tools were most visible, followed By Language-Focused and Interactive Tools. This pattern is compatible with research describing AI as a resource for planning, content creation, language support, and interaction (Forero Corba & Negre Bennasar, 2023; Ji et al., 2023). The finding also extends the literature by showing that these uses were

not described abstractly: they were embedded in internship tasks such as preparing lesson outlines, refining explanations, creating posters, correcting notes, translating material, and generating quizzes.

The results also help clarify how TAM operates in a phenomenological context. Participants' accounts of organized lesson plans, clearer explanations, engagement activities, language support, and increased confidence can be read as expressions of perceived usefulness. The fact that participants repeatedly returned to these benefits suggests that usefulness was experienced through concrete teaching problems. AI became acceptable when it appeared to solve a problem that the pre-service teacher was already facing.

5.2. RQ1 and the Purposes of AI use

The dominance of Content Generation Tools Suggests that pre-service teachers first encountered AI through the immediate demands of lesson preparation. This finding is understandable because lesson planning requires examples, explanations, sequencing, visual materials, and language adaptation. Generative AI can provide rapid drafts, which teachers can then modify. Rahman and Watanobe (2023) describe this combination of opportunity and risk in relation to ChatGPT, while Garcia Castro et al. (2024) identify both advantages and disadvantages in school-related uses.

The Language Focused Theme is also noteworthy because it points to an inclusion-oriented use of AI. Translation and language refinement were described as tools for making classroom communication clearer. Ji et al. (2023) similarly emphasize the potential of conversational AI in language education when collaboration with human teachers is maintained. The present findings therefore suggest that pre-service teachers may view AI not only as a content generator but also as a mediator of communication.

Interactive Tools formed the smallest RQ1 category, but their accounts were vivid. The descriptions of quizzes and student excitement suggest that AI-supported interactivity may change the social character of a lesson. However, the small number of references means that the study cannot establish that interactive AI is less important in general. It was simply less represented in these eight accounts.

5.3. RQ2 and Perceived Usefulness

The four usefulness themes show that participants experienced AI at multiple levels: planning, classroom

interaction, communication, and professional identity. Enhanced Organization represented the instrumental dimension of usefulness. Engagement And Motivation represented the classroom dimension. Communication And Inclusivity represented the relational dimension. Confidence And Professional Growth represented the professional dimension.

The professional dimension is especially important. Pre-service teachers enter internship with limited classroom experience and may experience uncertainty about lesson sequencing, explanations, materials, and classroom interaction. Participants' descriptions suggest that AI sometimes functioned as a preparatory scaffold. This is consistent with research on teacher readiness and AI attitudes (Galindo Dominguez et al., 2024; Yue et al., 2024) and with research concerning AI anxiety among teacher candidates (Hopcan et al., 2024).

However, the confidence finding should be interpreted carefully. Confidence is a perception, not a direct measure of competence. AI may help a pre-service teacher feel prepared without necessarily ensuring pedagogical quality. Conversely, a teacher may become more confident precisely because AI prompts them to review, organize, or rehearse their lesson. The important implication is that teacher education should help pre-service teachers convert AI-supported confidence into reflective professional judgement rather than encouraging uncritical dependence.

5.4. RQ3 and the Conditions of Responsible Use

The most important tension in the study is that usefulness and risk appeared together. Technical constraints show that adoption depends on facilitating conditions. Accuracy concerns show that AI requires verification. Ethical concerns show that technological convenience can conflict with educational values. Institutional resistance shows that individual willingness is embedded within social and organizational contexts.

The accuracy theme is particularly significant. Participants described cross-checking AI-generated information with textbooks and syllabus materials. This practice suggests that AI literacy in teacher education should include verification literacy: the ability to question, compare, contextualize, and correct AI output. This point is consistent with research on AI ethics and over-reliance (Holmes et al., 2022; Rahman & Watanobe, 2023; Zhai et al., 2024).

The ethical concerns similarly reveal that participants were thinking beyond efficiency. Their concerns about plagiarism, bias, dependence, creativity, and fairness indicate an emerging awareness that AI changes the conditions under which learning occurs. Such concerns are central to ethical AI scholarship (Farazouli, 2024; Holmes et al., 2022). They also resonate with broader concerns raised in studies of generative AI in educational settings (Firat, 2023; Koroleva & Jomezai, 2024).

The institutional-support theme requires more cautious interpretation because the evidence was comparatively limited. The statement that senior teachers doubted AI reliability suggests that mentor attitudes can shape pre-service teachers' willingness to experiment. Chan (2023) emphasizes the importance of institutional policy and guidance, while Woodruff et al. (2023) identify barriers to AI adoption in K–12 contexts. The present study adds a field-based perspective: for an intern, institutional support is not an abstract policy matter but part of the immediate professional environment.

5.5. Critical Synthesis with Previous Research

The present findings largely support earlier literature while adding a contextual perspective. Previous research often examines AI readiness through attitudes, competencies, or institutional frameworks, whereas this study shows how usefulness, constraints, and concerns coexist during everyday teaching. Participants negotiated AI adoption selectively, balancing benefits with unreliable infrastructure, inaccurate outputs, and risks of student dependence. This negotiated acceptance complements extended TAM perspectives while demonstrating the value of lived experience. The study also highlights the importance of school contexts in India and supports calls for assessment redesign, particularly regarding AI-generated tasks, fairness, learning outcomes, and responsible assessment practices.

5.6. Theoretical Contribution

The theoretical contribution lies in connecting TAM with lived experience. Rather than using TAM only to predict technology adoption, the study shows how perceived usefulness is embedded in professional, material, ethical, and relational contexts. The participants did not experience usefulness as an isolated psychological judgement. They experienced it through specific tasks and within specific conditions.

The findings therefore suggest a contextualized interpretation of technology acceptance: perceived usefulness may encourage experimentation, but trust, infrastructure, ethical judgement, mentor response, and professional confidence influence whether that usefulness can be translated into classroom practice. Phenomenology contributes the experiential layer that acceptance models may overlook, while TAM provides a conceptual vocabulary for interpreting recurring patterns in the accounts.

5.7. Practical Implications

The findings have several practical implications. Teacher education institutions should integrate AI literacy into coursework and internship preparation, covering prompt design, output verification, bias, copyright, privacy, and responsible lesson design. School mentors should guide interns to justify AI use, verify outputs, and align activities with learning outcomes. Policymakers should strengthen internet, hardware, display facilities, technical support, and clear guidelines on privacy and academic integrity. Pre-service teachers should treat AI as an assistant, combining its benefits with verification and sound pedagogical judgement.

6. Limitations

The study has several limitations. First, the sample included only eight participants from two universities, limiting transferability. Second, the participants were drawn from two institutional contexts in India, so their experiences may not reflect the conditions of other states, universities, or school systems. Third, the study relies on self-reported interview accounts rather than direct classroom observation or independent measures of teaching effectiveness. Fourth, interviews lasted approximately 20–25 minutes, which constrained the depth of some accounts. Fifth, participants may have selectively remembered or emphasized particular experiences. Finally, because the study was phenomenological, it was designed for depth of interpretation rather than statistical generalization.

These limitations do not invalidate the findings; rather, they define the claims that can reasonably be made. The study provides contextual insight into how a small group of pre-service teachers experienced AI during internship. It does not establish the effectiveness of AI for all pre-service teachers or demonstrate causal effects on student learning.

7. Recommendations

Teacher education programmes should integrate AI literacy through guided practice, output verification, ethical decision-making, and reflection on learner autonomy. Schools should provide clear expectations, mentorship, and orientation for responsible AI use. Institutions should strengthen infrastructure, technical support, privacy, academic integrity, and accountability frameworks. Future research should examine larger and more diverse samples across Indian contexts, using longitudinal, mixed-methods, quasi-experimental, and phenomenological designs to investigate changes in AI perceptions, learning outcomes, engagement, language proficiency, critical thinking, and the influence of institutional policies and curricula.

8. Conclusion

This study explored the lived experiences of eight pre-service teachers using AI tools during school internship. Three broad patterns of AI use emerged: content-generation tools, language-focused tools, and interactive learning tools. Participants perceived AI as useful for organizing and delivering lessons, supporting engagement, improving communication and inclusivity, and strengthening confidence. At the same time, they experienced technical limitations, concerns about accuracy and reliability, ethical and pedagogical risks, and limited institutional support.

The central conclusion is that AI acceptance among pre-service teachers is contextual and negotiated. Perceived usefulness encourages experimentation, but usefulness alone does not guarantee effective or responsible classroom integration. Trust, verification, infrastructure, mentor responses, and professional judgement shape how AI is actually experienced. The theoretical contribution of the study lies in showing how TAM can be enriched by phenomenological attention to the lived context of technology use. Practically, the findings support teacher education that combines AI competence with ethical reasoning, critical verification, and pedagogical judgement. Given the study's small and context-specific sample, these conclusions should be treated as situated insights rather than generalizable claims.

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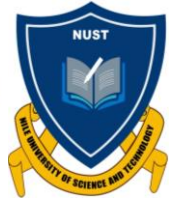
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Parenting Styles and Adult Life Satisfaction in India: A Narrative Review of Evidence from Indian Adult Samples

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Abstract: Life satisfaction is a central cognitive component of subjective well-being and reflects an individual's overall evaluation of life. Parenting styles and remembered parental rearing experiences may be associated with adult well-being, but the strength and consistency of these associations in Indian samples remain uncertain. This narrative review synthesises Indian studies published from 2015 to 2026 that examined parenting or perceived parental rearing alongside life satisfaction in adult samples. A structured, documented search of scholarly web sources and journal repositories was undertaken, supplemented by backward reference tracking from a relevant Indian study published in 2021. Studies were screened for Indian sampling, adult participants, a parenting-related exposure, and a direct life-satisfaction measure. Four studies were identified as potentially relevant to the review: Rani, Singh, and Jaiswal (2016), Singh, Thapliyal, and Chowdhury (2021), Chugh and Dutt (2025), and Dhatri et al. (2026). The studies differed in their operationalisation of parenting, participant groups, and analyses. Rani et al. reported that remembered parental rearing dimensions explained a modest proportion of variance in life satisfaction. Singh et al. reported a positive correlation between an aggregate parenting-style score and life satisfaction, although the reporting does not establish style-specific associations. Chugh and Dutt reported no significant association in their young-adult and working-adult groups. Dhatri et al., studying working mothers' current parenting styles, found a weak, nonsignificant association between parenting-style scores and life satisfaction. Overall, the available evidence is limited and methodologically heterogeneous. It does not support a definitive conclusion that a particular parenting style consistently predicts adult life satisfaction in India. More transparent, adequately powered studies using validated measures, clearly defined adult samples, and culturally responsive designs are needed.

Keywords: Parenting styles, Parental rearing, Life satisfaction, Adults, India, Narrative review

1. Introduction

Life satisfaction refers to an individual's cognitive evaluation of the quality of their life according to personally selected standards. It is commonly distinguished from momentary affect and is treated as a core component of subjective well-being (Diener et al., 1985; Diener & Ryan, 2009). The Satisfaction With Life Scale (SWLS) is one of the most widely used measures of this construct and assesses global life evaluation rather than satisfaction with a single domain (Diener et al., 1985; Pavot & Diener, 2008). Understanding the developmental and relational factors associated with life satisfaction is relevant to adult development, family psychology, and mental-health research.

Parenting styles describe relatively enduring patterns of parental responsiveness and demandingness. Baumrind's framework distinguishes authoritative parenting, characterised by warmth and clear expectations; authoritarian parenting, characterised by control and an emphasis on obedience; and permissive parenting, characterised by warmth with comparatively few limits (Baumrind, 1966, 1971). Maccoby and Martin (1983) extended this framework by distinguishing four patterns through the combination of responsiveness and demandingness, including neglectful or uninvolved parenting. Darling and Steinberg (1993) further conceptualised parenting style as the emotional climate in which specific parenting practices occur.

The association between parenting and well-being may persist beyond childhood through internalised expectations, emotion-regulation habits, self-evaluation, coping patterns, and adult relationship experiences. Attachment theory proposes that early caregiving contributes to internal working models of the self and others (Bowlby, 1969; Ainsworth, 1989). Self-determination theory suggests that social contexts that support autonomy, competence, and relatedness facilitate psychological functioning and well-being (Deci & Ryan, 2000; Ryan & Deci, 2000). These perspectives offer plausible explanations for associations between remembered parenting and adult outcomes, but they do not establish that parenting style is a direct or independent cause of life satisfaction.

Cultural context is particularly important when interpreting parenting in India. Family relationships

may involve strong interdependence, obligations to elders, and continuing parental involvement in adult decisions, although practices vary substantially by region, class, religion, household structure, and generation (Chadda & Deb, 2013; Tuli, 2012; Tuli & Chaudhary, 2010). Parenting behaviours described as strict or controlling in one setting may carry different meanings in another; however, cultural explanations should be tested empirically rather than assumed. Cross-cultural work has debated the transferability of conventional parenting-style typologies and shown that associations can vary across cultural groups (Chao, 1994; Rudy & Grusec, 2006; Sorkhabi, 2005).

International studies have examined parenting styles in relation to life satisfaction in adolescents, university students, and emerging adults. For example, Lavrič and Naterer (2020) investigated exposure to parenting styles and life satisfaction across ten Southeast European countries, while Stavoulaki et al. (2021) examined parenting styles, academic achievement, and life satisfaction among college students. Such research provides a useful conceptual comparison, but it cannot be treated as evidence about Indian adult samples. The present review therefore centres on studies conducted in India and distinguishes findings about adults' own current parenting from findings about adults' remembered experiences of being parented.

An earlier review by Sahithya et al. (2019) synthesised Indian research on parenting styles and outcomes in children and adolescents. The current review addresses a related but distinct question: what direct evidence is available from Indian adult samples on parenting-related variables and life satisfaction? Rather than assuming that findings from children or other countries apply to Indian adults, this review assesses the amount, character, and limitations of directly relevant evidence.

1.1 Review Questions

The review was guided by three questions: (a) What Indian studies published between 2015 and 2026 have examined parenting styles or perceived parental rearing in relation to life satisfaction among adults? (b) What findings have these studies reported, and how comparable are their measures and samples? (c) What methodological and conceptual gaps should guide future research?

2. Conceptual Framework

2.1 Parenting Styles and Perceived Parental Rearing

Parenting style and parental rearing are related but not interchangeable constructs. The Parental Authority Questionnaire (PAQ; Buri, 1991) assesses perceived parental authority in terms of authoritative, authoritarian, and permissive patterns. Other instruments assess dimensions such as emotional warmth, rejection, overprotection, or differential treatment. These dimensions may capture meaningful aspects of early family experience without mapping exactly onto Baumrind's three-style typology. For this reason, the present review retains each study's terminology and avoids relabelling parental-rearing dimensions as categorical styles when the original measure does not justify that interpretation.

2.2 Life Satisfaction

Life satisfaction is a global cognitive judgement about one's life, not a synonym for self-esteem, resilience, emotion regulation, psychological well-being, or marital satisfaction (Diener et al., 1985; Pavot & Diener, 2008). The present review gives priority to studies that directly measured life satisfaction using the SWLS or another clearly identified life-satisfaction measure. Studies that measured only proximal constructs are not treated as direct evidence for the central association.

2.3 Potential Explanatory Pathways

Remembered parenting may relate to adult life satisfaction through several possible pathways. Emotional warmth and acceptance may support a stable sense of worth and relational security; autonomy-supportive parenting may help develop competence and agency; and patterns of parental control may shape emotion regulation and coping. These are plausible theoretical pathways, not established mediators in the Indian studies reviewed here. Adult well-being is also shaped by current relationships, employment, economic security, health, personality, and broader social conditions. Accordingly, a correlation between remembered parenting and life satisfaction should not be interpreted as a causal effect without appropriate longitudinal or experimental evidence.

3. Research Methodology

3.1 Design

This paper uses a narrative review design with a structured search and explicit eligibility criteria. The review is not presented as a systematic review, and no meta-analysis was attempted. A narrative approach was selected because the located studies were few, differed in their definitions of parenting and adult populations, and did not provide sufficiently comparable statistics for quantitative synthesis.

3.2 Search Strategy

A web-based scholarly search was conducted in October 2026, with a publication window of 2015–2026. Search phrases included combinations of “parenting style,” “perceived parenting,” “parental rearing,” “life satisfaction,” “Satisfaction With Life Scale,” “adult,” “young adult,” “working adults,” “India,” and “Indian.” Targeted searches were conducted in journal repositories and scholarly records, including the International Journal of Indian Psychology, the International Journal of Interdisciplinary Approaches in Psychology, publisher pages, ResearchGate records, and citation trails. The references in Singh, Thapliyal, and Chowdhury's (2021) paper were used as a supplementary source of candidate studies. Search results were checked for population, construct, year, and country where the accessible record allowed.

The search was not exhaustive across all bibliographic databases. PsycINFO, Scopus, and Web of Science were not comprehensively searched, and access to full texts varied. Consequently, the studies identified should be understood as the evidence located through the documented search rather than proof that no other eligible studies exist.

3.3 Eligibility Criteria

Studies were considered relevant when they (a) were published between 2015 and 2026; (b) used an Indian sample or clearly reported data collection in India; (c) included adult participants aged 18 years or older; (d) measured a parenting-style or perceived parental-rearing construct; and (e) directly measured life satisfaction using the SWLS or another identifiable instrument. Studies with mixed adolescent–adult samples were not treated as eligible unless adult-only

results could be separated. Studies examining current parenting practices in adults were distinguished from studies examining remembered experiences of being parented. This distinction was retained because the two research questions concern different directions of the family–well-being relationship.

3.4 Data Extraction and Synthesis

For each candidate study, information was extracted from accessible records concerning authorship, publication year, setting, sample, measures, and principal findings. When the full text or age range was not verifiable, the study was not treated as confirmed eligible evidence. Findings were synthesised narratively by study and by conceptual focus. Because the evidence base was small and measures differed, no pooled estimate was calculated. The review did not apply a formal risk-of-bias instrument; methodological concerns are described qualitatively.

4. Results

4.1 Overview of the Located Evidence

The search identified a small group of Indian publications that directly connect parenting-related measures with life satisfaction in adult samples. Four studies were retained as relevant to the narrative synthesis, although they do not all investigate the same parenting construct. Rani et al. (2016) examined adults' perceived parental rearing experiences; Singh et al. (2021) assessed perceived parenting style and life satisfaction among young adults; Chugh and Dutt (2025) examined parenting style and life satisfaction in young and working adults; and Dhatri et al. (2026) studied current parenting styles and life satisfaction among working mothers. The results therefore span both remembered parenting and participants' own current parenting. These domains are discussed separately to avoid treating them as equivalent.

4.2 Studies of Remembered Parental Rearing and Adult Life Satisfaction

Rani, Singh, and Jaiswal (2016) investigated satisfaction with life in relation to perceived parental rearing styles among married Indian adults. The available abstract reports a sample of 600 Hindi-speaking married adults, with an equal representation of men and women and 10–20 years of married life. The researchers administered Hindi versions of the

Perceived Parental Rearing Style Questionnaire (PPRSQ) and the Satisfaction With Life Scale (SWLS). Their stepwise regression analyses considered parental rejection, emotional warmth, overprotection, and favouring a particular child. The four dimensions collectively accounted for 8.371% of the variance in life satisfaction; emotional warmth alone accounted for 8.140% in the reported model sequence. The authors interpreted the findings as evidence of an association between recalled parental rearing and life satisfaction in the Indian cultural context.

This study is particularly relevant because it uses an adult sample and a direct measure of life satisfaction. At the same time, the PPRSQ dimensions should not be interpreted as direct tests of the authoritative, authoritarian, and permissive categories unless the instrument and analyses explicitly support that mapping. The accessible record provides the abstract but not the full article; details such as the full model coefficients, confidence intervals, and all diagnostic information could not be independently checked. The study therefore provides relevant but incompletely verifiable evidence.

4.3 Studies of Perceived Parenting Style and Life Satisfaction among Young and Working Adults

Singh, Thapliyal, and Chowdhury (2021) examined parenting style, emotion regulation, and life satisfaction in young adults in India. The article reports that 150 participants were recruited and that 130 were retained after data cleaning. Participants were aged 18–35 years. The study used the Parental Authority Questionnaire (PAQ), SWLS, and Emotion Regulation Questionnaire (ERQ). The authors reported a positive correlation between the overall parenting-style score and life satisfaction ($r = .451, p < .01$), and a positive correlation between emotion regulation and life satisfaction ($r = .842, p < .01$).

The study offers direct evidence because both parenting and life satisfaction were measured in an adult sample. However, the results do not clearly identify separate associations for authoritative, authoritarian, and permissive parenting. The article also contains reporting details that warrant caution, including a life-satisfaction mean that appears difficult to reconcile with the scale scoring described in the methods. The reported correlation should therefore be presented as the authors' result, not as a verified style-specific effect. The cross-sectional design also precludes causal conclusions.

Chugh and Dutt (2025) examined parenting style, defence mechanisms, and life satisfaction among 100 Indian participants divided equally between young adults aged 18–25 and working adults aged 26–45. Participants were recruited through convenience sampling and completed standardised questionnaires online. The authors reported that parenting styles were not significantly associated with life satisfaction among young adults. In the working-adult group, parenting style was also not significantly associated with life satisfaction, although associations involving defence mechanisms were reported. This study is important because it includes adult age groups beyond the conventional university-student sample and reports findings that do not support a uniformly positive parenting–life-satisfaction association. The sample was small, however, and the authors acknowledged reliance on self-report and the lack of control for potential confounding variables.

4.4 Studies of Current Parenting and Life Satisfaction Among Adult Parents

Dhatri, Juliana, Sanju, and Shalini (2026) investigated work stress, current parenting styles, and life satisfaction among 75 working mothers in India. The study used a work-stressor questionnaire, a Parenting Styles Dimensions Questionnaire, and the SWLS. The authors reported a negative association between work stress and life satisfaction ($\rho = -.316$, $p = .006$), a positive association between work stress and parenting-style scores ($\rho = .327$, $p = .004$), and a weak, nonsignificant association between parenting-style scores and life satisfaction ($\rho = -.097$, $p = .409$). They also reported that authoritarian and permissive styles were associated with higher work stress.

This study meets the broad criterion of measuring current parenting styles and life satisfaction in an adult Indian sample, but it addresses a different question from research on the long-term influence of childhood parenting. Here, the participant is the parent, and the exposure is her own parenting practice; in studies such as Rani et al. (2016) and Singh et al. (2021), the focus is the adult's perception of how they were parented. The result should be interpreted within the context of working mothers and work stress rather than generalised to all Indian adults.

4.5 Candidate Studies Not Confirmed for the Primary Evidence Base

Mishra (2024), in “Relationship of Perceived Parenting Styles, Resilience and Life Satisfaction Among Youth,”

reported positive associations between authoritative parenting and both resilience and life satisfaction. The article is available through the International Journal of Interdisciplinary Approaches in Psychology. However, the accessible record did not provide enough verifiable information about the sample's exact age range, sample size, and statistical estimates to confirm that it meets the adult-only criterion and to extract its results reliably. It is therefore treated as a potentially eligible study requiring full-text verification rather than as confirmed evidence in the primary synthesis.

Aman's study of parental authority, personality, self-efficacy, and life satisfaction among school-going children was excluded because its participants were minors. Similarly, the 2026 study by Kapur and Sethi on perceived parenting styles, imposter phenomenon, and life satisfaction included participants aged 15–24; adult-only results were not available separately in the accessible record. Such studies may inform a broader developmental discussion but cannot be counted as adult-only evidence under the present criteria.

5. Discussion

5.1 Main Findings

The review identified a limited number of Indian studies that directly measured parenting-related constructs and life satisfaction in adults. The findings are mixed. Rani et al. (2016) reported that remembered parental rearing dimensions explained a modest proportion of variance in life satisfaction. Singh et al. (2021) reported a positive correlation between an aggregate parenting-style score and life satisfaction, but the analysis does not establish which parenting style accounted for that association. Chugh and Dutt (2025) found no significant association in their young-adult and working-adult groups. Dhatri et al. (2026), examining participants' current parenting, likewise found a weak, nonsignificant relationship between parenting-style scores and life satisfaction among working mothers.

These results do not justify a general claim that authoritative parenting consistently predicts higher life satisfaction among Indian adults, nor that authoritarian or permissive parenting consistently predicts lower satisfaction. The studies use different parenting constructs, include different adult groups, and examine different relational directions. The evidence is better characterised as sparse and heterogeneous than as uniformly supportive or contradictory.

5.2 Why the Findings May Differ

Several factors may explain the variation. First, measurement differs: the PPRSQ assesses dimensions of remembered parental rearing, whereas the PAQ assesses perceived parental authority, and the Parenting Styles Dimensions Questionnaire in Dhatri et al. (2026) assesses participants' own parenting practices. These instruments do not necessarily measure the same construct. Second, adult roles differ. Married adults with 10–20 years of marriage, university-linked young adults, working adults, and working mothers may experience different stressors and sources of life satisfaction. Third, sample size and convenience sampling may limit precision and representativeness. Finally, current family relationships, economic conditions, employment, health, personality, and cultural expectations may influence both recalled parenting and present life satisfaction.

5.3 Cultural Interpretation

Indian family life is diverse, and it would be inappropriate to treat Indian parenting as a single cultural pattern. Norms concerning respect, interdependence, autonomy, parental involvement, and family obligation vary across communities and households. Theoretical work suggests that the meaning of control and responsiveness can be culturally contingent (Chao, 1994; Rudy & Grusec, 2006; Sorkhabi, 2005). Yet the studies reviewed here do not directly test whether cultural values moderate the relationship between parenting and adult life satisfaction. Cultural explanations should therefore be treated as hypotheses for future research rather than as established explanations for the observed results.

5.4 The Research Gap

The principal gap is not the absolute absence of Indian research. Rather, the literature located for this review contains few studies that simultaneously provide a clearly defined adult Indian sample, a specified parenting construct, a validated direct measure of life satisfaction, and sufficiently transparent statistical reporting. The evidence is also fragmented across remembered parental rearing, perceived parenting authority, and current parenting practices. Because these constructs address different questions, they should not be combined uncritically.

Further limitations include the concentration of studies in convenience samples, small samples in some recent studies, cross-sectional designs, limited reporting of

effect sizes and confidence intervals, and insufficient adjustment for potential confounders. The potential relevance of Mishra (2024) illustrates a further issue: accessible abstracts may suggest a direct association, but incomplete reporting of age range and statistics can prevent reliable inclusion. Comprehensive database searching and full-text verification are needed before the number of eligible Indian studies can be stated definitively.

A strong next step would be a multi-region study of adults aged 18 years and above that measures recalled maternal and paternal parenting separately, uses a validated parenting-style instrument and the SWLS, and reports correlations, regression coefficients, confidence intervals, and model diagnostics. Analyses should account for age, gender, socioeconomic circumstances, current family relationships, and major adult roles. Longitudinal designs would help establish temporal ordering, while qualitative research could clarify how adults interpret warmth, strictness, autonomy, and obligation within different Indian family contexts.

5.5 Implications

For researchers, the findings highlight the need for more precise operational definitions and transparent reporting. Parenting dimensions should be analysed and interpreted according to the properties of the instrument rather than automatically collapsed into style labels. For practitioners, the current evidence does not support using remembered parenting style as a stand-alone predictor of an adult client's life satisfaction. Family history may be explored as one aspect of a broader psychosocial assessment, while taking account of present circumstances and individual differences. Policy or programme recommendations cannot be derived confidently from the small and heterogeneous evidence base.

6. Strengths and Limitations

A strength of this review is its India-focused scope and its distinction between remembered parental rearing and current parenting practices. It prioritises direct life-satisfaction outcomes rather than treating self-esteem, resilience, emotion regulation, or general psychological well-being as equivalent constructs. It also makes uncertainty explicit when an accessible record does not permit full verification.

The review has important limitations. The search was web-based and did not comprehensively cover PsycINFO, Scopus, Web of Science, or all relevant

Indian academic repositories. Search dates and records should be archived and independently replicated before formal submission. Full texts were not accessible for every candidate study, and the review did not use two independent reviewers or a formal quality-appraisal instrument. Some included studies contain unclear or potentially inconsistent statistical reporting. The findings are therefore provisional and should not be interpreted as an exhaustive census of all Indian studies published from 2015 to 2026.

7. Conclusion

Indian research published between 2015 and 2026 provides some direct evidence concerning parenting-related experiences and adult life satisfaction, but the evidence base remains limited and heterogeneous. Remembered parental rearing dimensions have been associated with life satisfaction in one large adult sample, and one young-adult study reported a positive association between an aggregate parenting score and life satisfaction. Other studies found no significant relationship, including a study of young and working adults and a study of working mothers' current parenting practices. Differences in constructs, samples, and reporting prevent straightforward comparison. The most defensible conclusion is that the relationship between parenting and adult life satisfaction in India remains insufficiently established. Larger, better reported, culturally responsive and preferably longitudinal studies are required.

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The Buddha as a Paradigm Character in Buddhist Educational Philosophy

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Abstract: The life of the Buddha and his teachings provide a great example for Buddhist educational philosophy which emphasizes the aspects of ethical conduct (*Sīla*), concentration (*Samādhi*), wisdom (*Paññā*), and self-transformation. This study discusses the Buddha as a great teacher whose educational methods were directed toward the holistic development of individuals and society. Although Buddhist teachings ultimately aim at *Nibbāna*, the Buddha emphasized that through self-development together with the support of society, individuals can overcome barriers and achieve meaningful human goals in Buddhist education philosophy. This article is based on a qualitative analysis of selected discourses from the Sutta Piṭaka, focusing on the Buddha's pedagogical approaches, ethical guidance, and practical instruction. The study highlights how the teaching approach of the Buddha was adapted in accordance with the intellectual capabilities and need for transformation of the learners. The study will emphasize the applicability of Buddhist education in today's moral and social context.

Keywords: Buddha, Buddhist Educational Philosophy, Individual, Sutta Piṭaka

1. Introduction

Education has always played a central role in human civilization. The Pali-English Dictionary defines the meaning of ‘*Ajjhāpana*’, (Skt. *Adhyāpana*) as ‘advising and educating’. The education is defined by some Pāli words as ‘*Sikkhā*, *sikkhāpeti*; *uggaṇhāpeti*, *sikkhāpana*’; and ‘*Ajjhāpana*’. In the Aggañña Sutta, the word *Ajjhāyaka* (reciter) is implying that some people only recited texts without practicing meditation. the *Jhāyaka* is the meditator. At that time, recitation was seen as spiritually inferior to direct practice and realization. Ironically, today intellectual knowledge and public teaching are often valued more highly than meditation and inner cultivation according to the Buddhist studies.

In contemporary India, many different philosophical traditions have attempted to define the purpose of education, the role of the teacher, and the qualities of ideal learners. Specially, main six heretical teachers of India (*Ṣaḍśāstrī*) together with Buddhist teachings, education is not merely the accumulation of knowledge or professional training. The education is a transformative process that aimed wisdom, morality, discipline, and liberation from suffering. In this paper I discussed how the Buddha occupies a unique place as the supreme teacher and the paradigm character in Buddhist educational philosophy. His life, conduct, methods of teaching, and compassionate guidance provide a complete model for educators and students alike. The Buddhist educational philosophy was rooted in practical wisdom and ethical transformation. Rather than other educational systems the Buddhist education seeks the harmonious development of morality (*Sīla*), concentration (*Samādhi*), and wisdom (*Paññā*) to achieve liberation (*Nibbāna*). The Buddha exemplified these qualities in his daily life and interactions. He educated individuals according to their abilities, social conditions, and psychological capacities. According to these evidences, the Buddha can identify as one of the greatest educational philosophers in world history rather than a religious leader.

2. The Concept of Educational Philosophy in Buddhism

The West scholar; Plato defined education as the training that develops moral character and good habits. Aristotle mentioned that education aims the balanced development of body and mind. But the Indian scholars

like Swami Vivekananda shows that education is the manifestation of the perfection already within a person. Together with Buddhism and education; the Buddhist educational philosophy is based on the understanding of human nature and the possibility of mental transformation. Education in Buddhism aims at freeing the mind from ignorance (*Avijjā*), craving (*Taṇhā*), and suffering (*Dukkha*). It is not limited to theoretical knowledge but includes ethical behavior, mindfulness, self-discipline, and insight into reality.

In the Buddhist education, the Buddha encouraged experiential learning rather than blind faith and encouraged critical inquiry and independent thinking. In the *Kālāma Sutta*, the Buddha advised the *Kālāmas* not to accept teachings merely because of oral transmission, lineage, testament, canonical authority, logic, inference, reasoned train of thought, acceptance of a view after deliberation, the appearance of competence, and teaching of respected teacher. The ultimate objective of Buddhist education is the cultivation of a fully awakened human being. Therefore, the educational process in Buddhism includes moral education, mental training, emotional balance, social harmony, and spiritual liberation. Within this framework, the Buddha becomes the perfect embodiment of educational ideals.

3. The Buddha as a Paradigm Character

The Buddha means “The Awakened One” or “The Fully Enlightened One,” signifying a being who has attained perfect wisdom (*Paññā*), liberation from suffering (*Dukkha*), and boundless compassion (*Karuṇā*) in Theravāda Buddhism. After attaining the Buddhahood, the Gautama Buddha declares to the roaming ascetic; *Upaka* that the Buddha was fully awakened through his wisdom, free from all defilements, unmatched in the world, and ready to teach the path to liberation for the benefit of all beings. Some qualities of the Buddha that described here that used in educational philosophy.

3.1 Perfect Knowledge (*Mahā Pannā*)

Wisdom (*Mahā Pannā*) is one of the most important attributes of Buddha as an ideal figure in education. The Buddha is introduced as *Sabbāññū* / *Sabbaññū*, *Lokavidū*, *Vijjācaraṇasampanno*, *Satthā devamanussānaṃ*, *Tathāgata*, *Sammāsambuddha*, *Bhagavā*, *Mahāmunī*, *Dasabaladhara*, and *Mahāpaññā* are described by his great knowledge in the Pāli Canon.

After attaining fully enlightenment under the *Bodhi* tree, the Buddha realized the three true knowledges (*Vijjā*) as,

01. *Pubbenivāsānussati-ñāṇa* - Knowledge of former lives.
02. *Cutūpapāta-ñāṇa* - Knowledge of the passing away and reappearance of beings.
03. *Āsavakkhaya-ñāṇa*- Knowledge of the destruction of the *āsavas*

These insights allowed the Buddha to understand the diverse mental dispositions of beings and adapt his teachings compassionately to lead them toward the end of suffering.

01. *Kisā Gotamī Therīgāthā*: The Buddha asks her to find mustard seeds from a house untouched by death, helping her realize the universality of suffering and overcome grief.
02. *Aṅgulimāla Sutta*: Instead of punishment, the Buddha uses calm compassion and a simple statement (“I have stopped”) to transform a violent killer into a monk.
03. *Cūḷa Mālunkya Sutta*: He avoids abstract metaphysical debates and focuses only on practical liberation from suffering.
04. *Upāli Sutta*: The Buddha gently corrects Upāli’s pride and leads him step by step from debate victory to humility and faith.
05. *Sāmaññaphala Sutta*: He teaches King Ajātasattu progressively from ethics to meditation to higher wisdom according to the king’s readiness.

His unique wisdom and skillful means therefore distinguish him as an incomparable teacher whose path to liberation cannot be surpassed. The Buddha taught people according to their level of understanding. In the *Tipiṭaka*, mentions as gradual instruction (*ānupubbikathā*):

01. *Dāna-kathā*: He first taught generosity to cultivate openness and non-attachment.
02. *Sīla-kathā*: Then he explained moral conduct (*sīla*) as the foundation of a pure and disciplined life.
03. *Sagga-kathā*: He described heavenly happiness (*sagga*) to inspire moral living through positive aspiration.

04. *Magga-kathā*: Finally, he taught the Noble Path leading to liberation, the highest goal.

This pedagogical flexibility demonstrates his profound educational insight. He knew how to communicate deep philosophical truths through simple examples, stories, similes, and dialogues. For instance, he compared the mind to a monkey, desire to fire, and the Dhamma to a raft used for crossing a river. These methods helped ordinary people understand complex teachings.

01. *Pāhārāda Sutta*: Compares the Dhamma to the ocean to show its vastness, depth, and liberating qualities.
02. *Cūḷahatthipadopama Sutta*: Uses the elephant’s footprint simile to explain gradual recognition of the Buddha’s teaching leading to liberation.
03. *Vammika Sutta*: Uses the ant-hill allegory to represent the human being and stages of spiritual practice.
04. *Rathavinīta Sutta*: Explains progressive purification through the simile of relay chariots leading step by step to Nibbāna.

Specially, through the first sermon of the Buddha at Sārānāth, Gautama Buddha demonstrated his profound knowledge and enlightenment in saying that no Ascetic, Brahmin, God, Māra, or any other creature of the world can ever reverse the Wheel of Dhamma started by him. This statement highlights the unmatched truth and power of the Buddha’s teaching, which leads beings toward liberation from suffering. The Buddha’s wisdom also included knowledge of human psychology. He understood different temperaments and used appropriate methods for each student. This individualized approach resembles modern learner-centered education.

3.2 Great Compassion (*Mahā Karuṇā*)

Compassion (*Karuṇā*) was another defining characteristic of the Buddha as an educator. His mission was motivated not by personal gain but by the welfare of all beings. The first advice to his 60 disciples as,

“Wander forth, mendicants, for the welfare and happiness of the people, out of sympathy for the world, for the benefit, welfare, and happiness of gods and humans.”

After enlightenment, he decided to teach the Dhamma out of compassion for humanity. The Buddha treated all individuals equally regardless of caste, gender, or social status. During a period dominated by social discrimination, he opened educational and spiritual opportunities to everyone. Kings, merchants, laborers, courtesans, and outcasts all received guidance from him.

01. *Upāli (Vinaya Piṭaka)*: A former barber was ordained before Sākya princes, showing rank based on virtue, not caste.
02. *Āṅgulimāla (MN 86)*: A violent murderer was accepted into the Saṅgha and attained Arahantship.
03. *Sunīta (Theragāthā tradition)*: An outcaste sweeper was ordained and realized liberation.
04. *Ambapālī (DN 16)*: A courtesan was respectfully accepted and offered dāna like anyone else.

This inclusiveness reveals the democratic nature of Buddhist education. The establishment of the Bhikkhu and Bhikkhunī Saṅgha further demonstrates the Buddha's commitment to education and spiritual equality. Women such as *Mahāpajāpatī Gotamī* and *Khemā Therī* became highly accomplished spiritual teachers under the Buddha's guidance.

3.3 Moral Integrity

According to Buddhist philosophy, a teacher should exemplify the virtues being taught. Perfect moral restraint and discipline characterized the life of the Buddha. The Buddha's speech, deeds, and thoughts were not tainted with greed, hatred, and delusion. Examples:

01. *Akkosaka Bhāradvāja Sutta* - When a Brahmin insulted the Buddha harshly, he remained calm and free from anger. He compared unaccepted insults to food refused by a guest, demonstrating patience and self-control.
02. *Rohitassa Sutta* - The Buddha rejected social superiority based on caste or birth. He taught that true nobility depends on wisdom and moral conduct.

03. *Mahāparinibbāna Sutta* - Even during his final days, the Buddha carefully followed discipline and mindfulness. He advised disciples to depend on the Dhamma and Vinaya after his passing.

04. *Kakacūpama Sutta* - The Buddha taught monks to maintain loving-kindness even when facing harm or abuse. His peaceful behavior reflected perfect emotional control and serenity.

05. *Sigālovāda Sutta* - The Buddha explained the mutual duties of teachers and students based on respect and responsibility. Teachers should guide students wisely, while students should honor and appreciate their teachers.

The Buddha exemplified his doctrines in all aspects of his behavior and actions. The relationship between the Buddha and his disciples rested on the virtues of trustworthiness, ethics, compassion, and mutual respect. In such a manner, the Buddha was the ideal teacher for his disciples because they not only received his teachings but followed his conduct as well with full dedication and conviction. His educational approach therefore combined theoretical instruction with exemplary conduct, creating a transformative model of learning through both teaching and lived experience.

4. Educational Methods Used by the Buddha

4.1 Dialogue and Discussion

The Buddha frequently used dialogue as a teaching method. Many discourses in the Pāli Canon are presented in conversational form. Rather than imposing doctrines, he encouraged questioning and reflection.

“ekam' samayam' bhagavaa saavatthiyam' viharati jetavane anaathapind'ikassa aaraame. tatra kho bhagavaa bhikkhoo aamantesi: “bhikkhavo”ti. “bhadante”ti te bhikkhoo bhagavato pachchassosum.”

His discussions with figures such as Sāriputta, Ānanda, and Vacchagotta illustrate his skill in communication. Through dialogue, learners became active participants in the educational process. This method resembles modern interactive learning, where critical thinking and participation are encouraged instead of passive memorization.

4.2 Use of Similes and Stories

The Buddha used similes, parables, and stories extensively to explain moral and philosophical concepts. These narratives made abstract ideas understandable and memorable. For examples

4.2.1 Alagaddūpama Sutta

01. *Aṭṭhikaṅkalūpamā kāmā* - a skeleton
02. *maṁsapesūpamā kāmā* - a scrap of meat
03. *tiṇukkūpamā kāmā* - a grass torch
04. *aṅgarakāsūpamā kāmā* - a pit of glowing coals
05. *supinakūpamā kāmā* - a dream
06. *yācitakūpamā kāmā* - borrowed goods
07. *rukkhaphalūpamā kāmā* - fruit on a tree
08. *asisūnūpamā kāmā* - a butcher's knife and chopping board
09. *sattisūlūpamā kāmā* - swords and spears
10. *sappasirūpamā kāmā* - a snake's head

4.2.2 Vammika Sutta

“Bhikkhu, ayaṁ vammiko rattiṁ dhūmāyati, divā pajjalati. Brāhmaṇo evamāha: “abhikkhaṇa, sumedha, satthaṁ ādāyā”ti. Abhikkhaṇanto sumedho satthaṁ ādāya ...pe...ito vā pana sutvā’ti. Idamavoca, bhante, sā devatā. Idaṁ vatvā tatthevantaradhāyi. Ko nu kho, bhante, vammiko, kā rattiṁ dhūmāyanā, kā divā pajjalanā, ko brāhmaṇo, ko sumedho, kiṁ satthaṁ, kiṁ abhikkhaṇaṁ, kā laṅgī, kā uddhumāyikā, ko dvidhāpatho, kiṁ caṅgavāraṁ, ko kummo, kā asisūnā, kā maṁsapesi, ko nāgo’ti?”

The use of stories in Buddhist education also had ethical purposes. Jātaka tales describing the Buddha's previous births taught virtues such as generosity, honesty, patience, and compassion. These narratives continue to influence moral education in Buddhist societies today.

01. *Temiya Jātaka* - Non-violence
02. *Khantivādi Jātaka* - Patience and Forgiveness
03. *Dīghīti Kosala Jātaka* – Forgiveness

04. *Ummagga Jātaka* - Diplomacy and Intelligence

05. *Mahāsīlava Jātaka* - Patience, Non-violence

06. *Devadhamma Jātaka* - Ethical Guidance and Moral Persuasion

4.3 Experiential Learning

The Buddha emphasized direct experience over theoretical speculation. Meditation practices such as mindfulness (*Sati*) and concentration (*Samādhi*) allowed students to verify teachings through personal experience. The message of the Buddhas describes to avoid evil, cultivate good, and purify the mind through mindfulness and direct experience in the Dhammapada as, *“Sabbapāpassa akaraṇaṁ, kusalassa upasampadā; Sacitta pariyo dapaṇaṁ, etaṁ buddhāna sāsanaṁ”*

According to the teachings of the Buddha, self-examination and contemplation were promoted, as was the concept that disciples should be your own island, your own refuge as, *“Attadīpā, bhikkhave, viharatha attasaraṇā anaññasaraṇā, dhammadīpā dhammasaraṇā anaññasaraṇā.”* The Buddha taught that it is possible to discover the truth through one's own experiences instead of relying solely on external sources.

4.4 Gradual Instruction

The Buddha adopted a gradual method of teaching known as *Anupubbikathā* (gradual discourse). He first discussed generosity, morality, and heavenly rewards before introducing deeper teachings such as impermanence and non-self. As examples:

01. *Cūḷapanthaka* - he began with a simple meditation practice of cleaning a cloth and reflecting on impurity before guiding him to deeper insight.
02. *Rāhula* - the Buddha first taught truthfulness and self-reflection in the *Ambalaṭṭhikarāhulovāda Sutta* before introducing profound meditation and wisdom teachings.
03. *Nanda* - the Buddha first appealed to worldly desires and then gradually led him toward renunciation and insight.

Throughout this pedagogical sensitivity The Buddha recognized that learners progress step by step according to their mental readiness. Effective education therefore requires patience and adaptation rather than rigid instruction.

5. The Buddha's Educational Philosophy and Human Development

5.1 Moral Development

Moral training is fundamental in Buddhist education. The Buddha taught ethical principles such as the Five Precepts, right speech, right action, and right livelihood to cultivate social harmony and individual responsibility. As examples;

01. *Alavaka* - the Buddha first calmly confronted his violence, then gradually taught him self-control, generosity, and ethical restraint, leading to his transformation.
02. *Sigala* - the Buddha gave step-by-step moral guidance on duties to parents, friends, and society in the *Sigalovada Sutta*.
03. *Chattamāṇavaka* - the Buddha first engaged him with simple conversation and then gradually guided him toward understanding deeper Dhamma teachings.

The educational aim of morality is not obedience through fear but the purification of the mind. Ethical conduct creates the foundation for concentration and wisdom. Consequently, the Buddha found that morality was very important for leading both an individual and societal life successfully. In contemporary societies, which suffer from violence, corruption, and degradation, morality is highly beneficial.

5.2 Intellectual Development

The Buddha encouraged inquiry, analysis, and understanding. His teachings rejected dogmatism and blind belief. Students were encouraged to investigate the causes of suffering and understand reality through wisdom.

The *Dhammacakkapavattana sutta* mentions that the Four Noble Truth as,

“bhikkhave, pubbe ananussutesu dhammesu cakkhum udapādi, ñāṇaṃ udapādi, paññā udapādi, vijjā udapādi, āloko udapādi”

The cultivation of wisdom in Buddhism entails an awareness of impermanence (*Anicca*), suffering (*Dukkha*), and non-self (*Anattā*). This cognitive process is not simply an academic one but a transformative one. Knowledge should be used for achieving enlightenment and compassion in life. Critical thinking emphasized by the Buddha is very close to current educational aims.

5.3 Emotional and Psychological Development

The Buddha understood the importance of emotional balance and mental health. Through mindfulness and meditation, Buddhist education trains individuals to manage anger, fear, anxiety, and attachment.

Practices such as loving-kindness meditation (*Mettā Bhāvanā*) cultivate empathy and emotional resilience. These methods are increasingly recognized in contemporary psychology and education for promoting mental well-being.

Mettāya, bhikkhave, cetovimuttiyā āsevitāya bhāvitāya bahulīkatāya yānīkatāya vatthukatāya anuṭṭhitāya paricīṭāya susamāraddhāya ekādasānisamsā pāṭikaṅkhā.

The Buddha's educational philosophy therefore addresses not only intellectual growth but also emotional maturity and psychological stability.

5.4 Spiritual Development

The highest aim of Buddhist education is spiritual liberation. The Buddha guided disciples toward enlightenment through ethical conduct, meditation, and wisdom.

Eg: *Cūḷapanthaka* Thera could not memorize teachings, so the Buddha gave him a cloth and asked him to repeat “*Rajoharaṇaṃ*” (“removing impurity”). By observing the cloth becoming dirty, he realized impermanence and attained *Arahantship* through insight meditation.

Spiritual education in Buddhism is universal rather than sectarian. It emphasizes inner transformation, self-

awareness, and freedom from suffering. The Buddha's own enlightenment serves as the ultimate example of human potential.

5.5 Teacher-Student Relationship

The relationship between the Buddha and his disciples illustrates an ideal educational model. The Buddha acted as a compassionate guide rather than an authoritarian ruler. He respected the individuality of learners and encouraged self-effort. The famous statement “*Tumhehi kiccaṃ ātappaṃ, akkhātāro Tathāgatā - Paṭipannā pamokkhanti, jhāyino mārabandhanā*” highlights that the teacher only guides the path, but true understanding and liberation must arise through the learner's own effort, practice, and meditation.

In the *Sigālovāda Sutta*, the five responsibilities of students toward teachers are:

01. *uṭṭhānena* - by rising for them
02. *upaṭṭhānena* - by serving them
03. *sussusāya* - by listening well
04. *pāricariyāya* - by looking after them
05. *sakkaccaṃ sippapaṭiggahaṇena* - by carefully learning their profession.

The five responsibilities of teachers toward students are:

01. *suvinītaṃ vinenti* - They make sure they're well educated
02. *suggahitaṃ gāhāpenti* - They make sure they're well drilled in memorization
03. *sabbasippasuttaṃ samakkhāyino bhavanti* - They clearly explain all the knowledge of the profession
04. *mittāmaccesu paṭiyādenti* - They introduce them to their friends and colleagues
05. *disāsu parittāṇaṃ karonti* - They provide protection in every region

In this sutta, teachers are described as showing compassion to students by training them well, ensuring proper understanding, teaching all necessary skills, introducing them to supportive social networks, and guiding and protecting them in all aspects of life. In this sutta, teachers are described as showing compassion to students by training them well, ensuring proper

understanding, teaching all necessary skills, introducing them to supportive social networks, and guiding and protecting them in all aspects of life.

The Buddha encouraged mutual respect within the Saṅgha. Seniors guided juniors through instructions and examples. The order, known as *Vuddhapāṭipātī*, was organized according to *Vassa*, with seniority established based on the number of rains-retreats completed. In monastic education, the Buddha emphasizes that the teacher (*ācariya*) should care for the disciple (*antevāsi*) as a son, reflecting a relationship of deep responsibility, guidance, and compassion as “*Ācariyo antevāsiṃ puttasaḍisaṃ upaṭṭhahati*.” Education therefore became a communal and ethical process.

The *Kesi sutta* mentions that, *Ahaṃ kho, kesi, purisadammaṃ saṇhenapi vinemi, pharusenapi vinemi, saṇhapharusenapi vinemi* meaning the Buddha guides learners sometimes gently, firmly, and combination of both, are showing that Buddhist education is flexible, compassionate, and tailored to individual needs for effective spiritual development. This model differs from systems based solely on authority and competition. Instead, Buddhist education promotes cooperation, mentorship, and personal transformation.

6. Relevance of the Buddha's Educational Philosophy to Contemporary Society

6.1 Value-Based Education

Modern education often prioritizes economic success and technical skills while neglecting ethical and spiritual values. As a result, societies experience moral crises, stress, violence, and environmental destruction. These two stories mentioned that,

01. *Mahā Dhāna Sītāputta story*: A wealthy son and daughter without moral education wasted their wealth and became beggars, showing the danger of knowledge without ethics.

02. *Angulimāla story*: *Angulimāla*, once a murderer, changed completely after the Buddha taught him compassion and non-violence, showing the power of ethical transformation.

The Buddha's educational philosophy offers a value-based alternative centered on compassion, mindfulness, non-violence, and wisdom. These principles can contribute to peaceful coexistence and responsible citizenship.

6.2 Mindfulness in Modern Education

Mindfulness practices derived from Buddhist teachings are now widely used in schools and universities around the world. They help students improve concentration, emotional regulation, and mental well-being. The *Mahāsatiṭṭhāna Sutta* mentions about four mindfulness as,

01. *Kāyānupassanā* (Mindfulness of body) - In modern education, this relates to physical awareness, health education, and embodied learning, such as sports, yoga, and attention to posture and well-being in the classroom.
02. *Vedanānupassanā* (Mindfulness of feelings) - This corresponds to emotional intelligence (EQ) education, where students learn to recognize, understand, and regulate emotions for better learning and social interaction.
03. *Cittānupassanā* (Mindfulness of mind) - This aligns with metacognition in education, where learners become aware of their thinking processes, attention, and cognitive strategies.
04. *Dhammānupassanā* (Mindfulness of mental objects/phenomena) - This relates to critical thinking and conceptual learning, where students analyze ideas, principles, ethics, and patterns in knowledge systems.

The *Mahāmaṅgala Sutta* teaches that education, practical skills, discipline, training, and proper speech are among the highest blessings in life as, "*Bāhusaccaṇṇa sippaṇṇa, vinayo ca susikkhito; Subhāsita ca yā vācā, etaṃ maṅgalamuttamaṃ*" The emphasis of the Buddha on awareness and self-discipline demonstrates the continuing relevance of Buddhist educational methods in contemporary contexts.

6.3 Inclusive and Humanistic Education

The Buddha rejected discrimination based on caste, class, and gender. His educational philosophy

recognized the equal potential of all human beings, emphasizing that true worth and intellectual-spiritual development are determined not by birth but by ethical conduct, disciplined practice, and the cultivation of wisdom. In *Vasalasutta* mention that equality as, *Na jaccā vasalo hoti, Na jaccā hoti brāhmaṇo, Kammunā vasalo hoti, Kammunā hoti brāhmaṇo*".

In today's world, where social inequality and prejudice still exist, the Buddha's inclusive approach remains highly relevant. Buddhist education promotes dignity, respect, and universal compassion.

Conclusion

The Buddha's life and teachings provide a timeless paradigm for education, integrating ethical, psychological, and social dimensions. The *Dhammapada* teaches that a person who is diligent, mindful, morally pure, disciplined, and wise gradually attains growth, honor, and spiritual progress.

"Uṭṭhānavato satimato, sucikamassa nisammakārino Saññatassa ca dhammajīvino, appamattassa yaso bhivaḍḍhati."

Buddhist education places great importance on lessons that focus on developing moral discipline, patience, compassion, and self-development as the basic foundation for education. Education in Buddhism is not limited to intellectual achievement but aims at the holistic development of character and wisdom. The identified principle reflects the Buddhist educational ideal of nurturing empathy, respect, and harmonious coexistence among individuals and communities. Buddhist education therefore encourages learners to develop not only knowledge and skills, but also compassion, mindfulness, and ethical responsibility.

The educational philosophy of the Buddha continues to have relevance in today's world. The learning methods that involve mindfulness can enable students to develop focus, emotional balance, self-reflection, and critical awareness. These educational methods can help students learn how to tackle problems intelligently.

Modern educational philosophies, which stress learning in its holistic sense, emotional intelligence, and values

education, share numerous similarities with Buddhist education philosophy. Both perspectives, the concepts of personal transformation, good behavior, reflection, and social responsibility are important. Especially notable is the Buddha's emphasis on the development of wisdom (*Paññā*), ethics (*Sīla*), and mindfulness (*Samādhi*) as prerequisites for any real education or human development. Through the incorporation of these ancient philosophical ideas into modern educational practices, a learning system addressing the various aspects of human existence can be developed.

In summary, the teaching of the Buddha reveals that the real purpose of learning is a personal experience that starts from within and impacts on society eventually. Education goes beyond the acquisition of knowledge, for it involves developing wisdom, compassion, mindful living, and ethics. In addition, the lessons taught by the Buddha provide practical solutions to various problems that have characterized modern-day education, such as moral decadence, social strife, emotional stress, and dehumanization among others. Incorporating concepts like mindfulness, moral conduct, and compassion in contemporary education will be essential in cultivating responsible individuals and fostering harmony between people through the development of humanity.

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Effectiveness of the Teaching-Learning Process of Buddhism Subject in Homagama Zonal Secondary Schools

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Abstract: This study explored the way Buddhism is taught in upper secondary schools in the Homagama education zone, Sri Lanka and the teaching methods, the students' involvement and their perception of the effectiveness of learning Buddhism. The method used was convergent mixed methods that consisted of questionnaires distributed to 125 students of five schools and interviews with 10 Buddhism teachers. Storytelling and recitation continued to be common, and group discussion was less common. Pupil engagement was rated as moderate and attitudes to learning were generally good. Strong correlations were found between perceived effectiveness and teaching methods and engagement. Its observed variation was accounted for by a multiple regression model with 83.3%, with limitations in interpretation due to shared measures on the questionnaires and the cross-sectional design. Teacher interviews revealed that lack of training, time and resources are obstacles to more participatory instruction. Results indicated that a combination of culturally embedded teaching with guided discussion, reflection and practical examples should be used. The evidence only relates to the schools in which it is found and is largely perception-based rather than being measured against the moral and spiritual development of the school.

Keywords: Buddhist education, student engagement, teaching methods, perceived learning effectiveness, Sri Lanka.

1. Introduction

1.1. Background

The Educational system of Sri Lanka Buddhism has evolved through more than 2000 years. Study of doctrine, ethics, language and reasoning was carried out in monastic institutions like Mahavihara and Abhayagiri, and the scriptural interpretation and dialogue were continued by the *pirivena* tradition (Rahula, 1978; De Silva, 2005). This inheritance provides Buddhism with a unique role in education within schools, namely: it is the only religion that can be taught as a curriculum subject and as a source for cultural and ethical teaching. For this reason, its aims are not only in terms of examination attainment, but also in terms of students' understanding and reflection/statement of the use of Buddhist values. In the present-day, however, the learners are exposed to more interactive and digital modes of communication and the role of discussion and active learning in the regular classroom is questioned (Karunanayaka et al., 2021). Constructivist theories imply that learners' understanding is enhanced when they reflect on the experiences they have and discuss ideas, not receive them passively (Piaget, 1970; Vygotsky, 1978). This study attempts to investigate those questions in the context of the classes of Buddhism in the upper secondary in the Homagama Education Zone, without taking the newer methods as better than established ones.

1.2. Problem Statement

Although Buddhism is a culturally valued faith, it seems that the teaching and learning in the chosen schools rely heavily on explanations, storytelling and recitation. There is no clear evidence of the consistency of links teachers make between these traditions and dialogue, participation and reflection. Local evidence is also poor in relation to the links between students' perceptions of the quality of learning and teaching methods and engagement and their own evaluation of the effectiveness of learning. They are not to be confused with satisfaction with lessons, or independent evidence of moral behaviour change.

1.3. Significance of the Study

The teaching of Buddhism aims to foster knowledge, moral decision making and contemplation. In this

regard, an analysis of classroom practices can provide an input for teacher development and improvement in the classroom in the Homagama Education Zone. The study also offers an example of culturally situated learning that can be used in the discussion of the possible co-existence between established religious teaching and participatory pedagogy. Its outcomes are based on the students' own perceptions, and not changes that have been verified in character or spirituality.

1.4. Objectives

The study aimed to identify common approaches in the teaching of Buddhism, gauge students' motivation to participate in the lessons, gauge the perceived effectiveness of the learning, explore relationships between these factors and to reveal teachers' experiences, training needs and perceived constraints to participatory teaching.

1.5. Research Questions

The study aimed to answer the following questions: What are the teaching methods in Buddhism class in the selected schools? What are students' levels of engagement and effectiveness of learning? What is the relationship between teaching and students' engagement and perceived effectiveness? What are some of the teachers' obstacles and opportunities?

2. Review of Literature

2.1. Buddhist Education in Sri Lanka

Traditionally, Buddhist education in Sri Lanka has been connected with the development of *sīla* (ethical discipline), *samādhi* (mental cultivation) and *paññā* (wisdom) in addition to knowledge of the Buddhist doctrine. Memorisation and interpretation, discipline and reflection (*pirivena* scholarship and monastic instruction) were the elements inculcated (Rahula, 1978; De Silva, 2005).

This is a mix that sets the present context apart from other school subjects and from religious education contexts that differ with regard to their doctrinal and institutional traditions. Meanwhile, the desire to inculcate values and responsible attitude is common to all types of moral education. The difference is important in selecting outcome measures examination

confidence cannot be used as a measure for ethical change as can only be enjoyment of lessons.

2.2. Religious and Moral Education Pedagogy

Narratives, recited and memorised texts pass on religious traditions or provide memorable forms of ethical ideas. Storytelling can help to encourage moral reflection in pupils as they interpret situations and relate them to their choices (Al-Hawamleh, 2019; Huth, 2021). Repetitions that do not include dialogue can also provide less scope for evaluating and assessing comprehension or contrasting interpretations. Thus, in a comparative perspective on religious and values education attention should be given to the ways in which methods are applied, not to a dualism of traditional and modern methods. Passive recall or active reflection may be made possible by classroom questioning in the same story. Respect for doctrinal and cultural meanings is crucial in Sri Lankan Buddhism lessons, as is the opportunity to allow students to raise ethical issues of their daily life.

2.3. Contemporary Learning Theories

Constructivist explanations of learning involve an actively reorganising process whereby learning takes place through experience-based understanding (Piaget, 1970). Social constructivism places importance on dialogue, language and guided participation in the process of understanding construction (Vygotsky, 1978). Reflective learning is a dimension of moral education as students have to consider choices and consequences, rather than just repeat rules (Dewey, 1933).

Similarly, Schön (1983) views professional reflection as a way that teachers reflect and make adjustments to practice. The research literature on active learning suggests that structured discussion and small group work may have significant benefits, but results do not necessarily carry over in the same form in all religious subject areas and with all cultural groups (Prince, 2004). These views collectively imply that storytelling/recitation may continue to be a way of teaching Buddhism, but discussion/reflection might provide space for interpretation. This is a theoretical idea that was explored based on classroom observations, not a causal mechanism that was determined in the current design.

2.4. Student Engagement and Outcomes

Student engagement refers to behavioural, emotional and cognitive involvement (Fredricks et al., 2004). Engagement has been linked to teacher support and classroom structure and opportunities for student choice (Skinner & Belmont, 1993). These dimensions are important in Buddhist education as a student may appreciate the subject and not listen attentively while the explanations are going on and are long in nature. The current research, therefore, disentangles students' engagement and their evaluations of the teaching method and the learning outcome. Its effectiveness is evidenced in terms of: understanding perceived, examination performance, daily application, and personal development. While these indicators are helpful to provide a student's perspective, they are not actually observed behaviors of moral conduct or spiritual achievement. Judicious interpretation of the statistical relationships that are unusually strong is important as correlation among the measures is expected conceptually.

2.5. Technology and Interactive Teaching

Technology can help with digital storytelling, guided inquiry, discussion and reflection when it is appropriate to the content and the way the content is taught (Mishra & Koehler, 2006). One Sri Lankan study points to an increase in teachers' and students' digital expectations and a gap in their experiences and access to digital resources (Karunanayaka et al., 2021). However, an electronic presentation can be teacher-directed, and a discussion, based on a traditional story, can be participatory. The ability to question and to organise the class and to choose appropriate resources may, therefore, be as important as the equipment itself. The barriers reported in the process of teaching ICT also indicate that teachers require more hands-on assistance than just devices (Soratha, 2024). Any decisions made in the context of Buddhist education should be sensitive to the correctness of the doctrine, the local school context and respect for religious practices.

2.6. Research Gap and Contribution

There is existing research that connects engagement to classroom experience and Buddhist education focuses on ethical development and maintaining the transmission of the Buddhist teaching. Much less is

recorded of the interplay of those concerns in the real-life of the Homagama Education Zone. Especially the relationship between positive attitudes of the students towards the subject and the results of their learning and active participation needs to be studied. The current study combines the questionnaire data with the teachers' accounts of the practice and constraints. It is contextual and conceptual by examining the usefulness of differentiation of the teaching methods, engagement and perceived outcomes in a culturally specific religious subject matter. The nature of the data is observational at a single point in time, so that the proposed relationships are understood as associations, rather than evidence of a cause-and-effect relationship.

3. Methodology

3.1. Design and Setting

A convergent mixed methods approach was used, involving a student questionnaire and semistructured interviews with teachers. The two strands were focused on current teaching practices and engagement and perceived measures of the effectiveness of learning and were interpreted together. The respondents for the data collection were five upper secondary schools in Homagama Education Zone.

Selections were made based on school access and suitability to the research topic. Due to a lack of a complete sampling frame of schools in the source manuscript and detailed selection thresholds, the five schools should be considered as an accessible sample for the study of the zone and not as a representative sample.

3.2. Participants and Sampling

There were 125 Grade 10 and Grade 11 Buddhism students as Quantitative sample. The interviews were carried out with 10 Buddhism teachers. The school recruitment was access based and teachers were selected purposively, as well as eligible student groups present in the school. The study was not intended to provide any estimate of the outcome that may be expected for all the schools in Sri Lanka. This means that there is a lack of a documented probability sampling frame that can be used to make broader generalisation.

3.3. Instruments and Data Collection

The questionnaire included the following: Demographic characteristics, reported use of storytelling, chanting, questioning, group work and activities, reported student engagement, and perceived learning outcomes. The items engaged with were in areas of interest, participation, attention and motivation. Outcome items covered perceived examination performance, conceptual understanding, values and use. Interviews with teachers investigated teachers' instructional decisions, limitations in time and resources, teachers' training and potential improvements. The process of item development as well as the utilization of previously validated scales and the formal adaptation protocol was not documented in these domains. The instrument should therefore not be regarded as a valid scale without any further evidence. It was reported that Educational and school permissions were granted and questionnaires and interviews were carried out in the school environment.

3.4. Analysis and Quality Considerations

Student responses were summarised using frequencies, means and standard deviations. Bivariate associations were explored using Pearson correlations and joint statistical relationships of teaching methods and engagement with perceived effectiveness were explored using multiple linear regression. Teacher interviews were analysed and compared thematically and quantitatively. The manuscript provided does not include any numerical Cronbach's alpha, information about the pilot sample, or a formal ethics committee approval number or validity results for items. These cannot be reconstructed from the results of the summaries and must be checked from the original results. Similarly, no residual diagnostics or common method bias test or common method overlap audit was provided. Consequently, results are presented as exploratory associations and the statistical limitations are clearly noted.

3.5. Ethical Considerations

Education authorities and school authorities have permission; voluntary participation, confidentiality and right to withdraw written in the manuscript. Procedures for guardian consent and student assent are important

as participants included school students. If an institutional ethical clearance is required, this will be cited as the actual committee and approval number. These details have not been provided, nor have they been assumed.

4. Results and Findings

4.1. Participant Profile

A survey was conducted with 125 students in 5 schools. Ages were 14 (10.4%), 15 (62.4%) and 16 (27.2%) years. The male and female students' numbers were 72.8% and 27.2%, respectively. Reported school categories were 1AB (37.6%), 1C (32.8%), provincial (21.6%) and national (8.0%). Only 100 students (55 Grade 11 and 45 Grade 10) are mentioned in the original manuscript. Therefore the distribution of the figures is not given here completely, but must be compared with the original data set before being published.

4.2. Reported Teaching Practices

Students used some conventional and some interactive strategies. Storytelling ($M = 2.98$, $SD = 0.735$) and chanting or recitation ($M = 2.98$, $SD = 0.756$) were familiar practices. Group work and discussion was rated lowest ($M = 2.89$, $SD = 0.732$), while opportunities to ask questions and share ideas was ($M = 3.11$, $SD = 0.764$). Real life examples ($M = 2.96$, $SD = 0.745$) and activities ($M = 3.00$, $SD = 0.596$) appeared moderately often. These are figures of ratings given by the pupils and not of frequencies in which teachers were observed.

4.3. Student Engagement

The range of engagement scores was between 2.92 and 3.22. The mean scores for personal connection to the content of the lessons ($M = 3.22$, $SD = 0.779$), discussion participation ($M = 3.18$, $SD = 0.673$), and motivation to learn beyond the classroom ($M = 3.15$, $SD = 0.636$) were the highest.

Enjoyment was rated $M = 3.02$ ($SD = 0.735$), while attention during explanations was lowest ($M = 2.92$, $SD = 0.768$). Teachers also reported increased interest during storytelling and in practical examples and decreased interest during longer explanations of the texts.

4.4. Perceived Learning Outcomes

This range for students' perceived outcome is from 3.13 to 3.30. The highest score was related to perceived examination performance with $M = 3.30$ and $SD = 0.721$. The understanding about central concepts of Buddhism was $M = 3.20$ ($SD = 0.672$) and self rated moral values & ethical thinking was $M = 3.20$ ($SD = 0.730$). Daily application scored $M = 3.18$ ($SD = 0.817$), perceived usefulness of teaching methods $M = 3.18$ ($SD = 0.734$), and perceived spiritual and intellectual growth $M = 3.24$ ($SD = 0.745$). The lowest was the item, "To become a better person" ($M = 3.13$, $SD = 0.672$). No single one of these questionnaire ratings provides evidence of behaviour change.

Table 1. Selected descriptive statistics

Item	Mean	SD
Storytelling	2.98	0.735
Group discussion	2.89	0.732
Lesson connection	3.22	0.779
Attention	2.92	0.768
Exam performance	3.30	0.721

4.5. Correlation Analysis

There were strong associations between all three composite variables (reported $p < .01$, $N = 125$). There was a strong correlation between teaching methods and engagement ($r = .888$) and teaching effectiveness ($r = .884$). There was a correlation between engagement and perceived effectiveness ($r = .890$). These correlations do not necessarily indicate direction of causal influence. Their magnitude also poses concern of conceptual/item overlap and responses obtained via one questionnaire.

Table 2. Pearson correlations

Variable pair	r	Significance
Teaching methods and engagement	.888	$p < .01$
Teaching methods and effectiveness	.884	$p < .01$
Engagement and effectiveness	.890	$p < .01$

4.6. Multiple Regression

The two predictor model reported $R = .913$, $R^2 = .833$ and adjusted $R^2 = .830$, with $F(2, 122) = 303.791$

(reported $p = .000$, conventionally written $p < .001$). Teaching methods ($B = .490$, $SE = .089$, $\beta = .443$, $t = 5.505$) and engagement ($B = .512$, $SE = .083$, $\beta = .496$, $t = 6.171$) both had positive reported coefficients ($p < .001$). The Durbin-Watson statistic was found to be 1.566. As reported the R^2 reveals that the predictors statistically explained 83.3% of the variance of the questionnaire outcome in this sample. It does not imply that those outcomes were because of instruction. In this case, two predictors were used, and the intercorrelation as reported was .888, which means the variance inflation factor of each predictor is about 4.72 ($1/[1 - .888^2]$). This indicates considerable commonality, and analysis of the items is warranted. No residual plots, linearity, heteroscedasticity, outlier or common method bias diagnostics were provided, thus the validity of these assumptions cannot be established.

Table 3. Multiple regression results

Predictor	B	SE	β	t
Teaching methods	.490	.089	.443	5.505
Engagement	.512	.083	.496	6.171

Note. Outcome: perceived learning effectiveness. $N = 125$. Model $R^2 = .833$, adjusted $R^2 = .830$, $F(2, 122) = 303.791$, $p < .001$. Both coefficients were reported at $p < .001$. Approximate VIF = 4.72.

4.7. Interview Themes

Four common themes emerged from the teachers' interviews. First, storytelling, reciting and textbook explanation were old and familiar methods of achieving the syllabus, particularly in the lead up to exams. Secondly, teachers mentioned the problems of inadequate technology, shortage of time, training and large classes as barriers to discussion and activity-based work. Thirdly, they felt that students' interest was more when lessons employed narratives and examples in everyday life than when they were treated to prolonged lectures. Fourth, there was a preference for more practical and interactive ways to put the Buddhist principles into practice by teachers and students.

Although the ten teachers interviewed provide interpretations of the patterns in the questionnaires, it is too small a sample to reflect all teachers in the zone.

5. Discussion

5.1. Interpretation and Theoretical Contribution

The results identify what seems like a tension that is common to RE: the importance of passing on a tradition and the educational importance of giving learners the opportunity to make meaning of it. The participating Homagama schools showed that the students were having positive association with Buddhism, and the ratings of attention and collaborative activity were lower. This distinction is important because enjoyment does not necessarily lead to classroom participation and moral development, and classroom participation does not necessarily lead to enjoyment and moral development. A learner can appreciate without necessarily being observed in the class, and reported understanding does not show behaviour outside of the school.

This is consistent with a constructivist perspective which sees reflection, guided participation and discussion, along with learning content, as key elements in the pattern. (Piaget, 1970; Vygotsky, 1978). It also aligns with engagement research, which differentiates emotional engagement with behavioral/cognitive engagement (Fredricks et al., 2004). But it is not possible to prove, through the present questionnaire, that group work is more effective than for moral results. The high inter-correlations may be due to the similar wording of the items or common response styles as well as true conceptual similarity of the three self-reported measures. For this reason, the high R^2 should be interpreted as a within-sample statistical association and not as particularly strong evidence of the impact of the instruction.

Such issues have special significance in the Sri Lankan context. Storytelling and chanting are part of the history of Buddhist education and can have doctrinal authority and cultural meaning (Rahula, 1978; De Silva, 2005). Unselective replacement might lead to a reduction in valued modes of learning. A more important question is what teachers do with them: a story with questions about compassion or conduct could be both transmission and reflection. Such possibilities are suggested by research on storytelling and active learning, but it is difficult to make direct comparisons due to differences in content and the educational context (Huth, 2021; Prince, 2004).

Religious education should also be aware of the diversity of the children's backgrounds and should not set out to achieve a universal measurable outcome that is based on one model of spiritual development.

Alternative explanations also need to be taken into account. Pressure for the exams can lead to a focus on reciting and teacher explanation when the teacher is interested in interaction. The frequency of group work might be influenced by class size, lesson time, training and materials. Pupils who like their teachers can give a high score for all questionnaire domains, irrespective of the effectiveness of the classroom. Furthermore, technology does not guarantee participation: it needs to be coupled with content and pedagogy (Mishra & Koehler, 2006). The interviews corroborate the significance of these practical restrictions, but do not enable the individual effects to be quantified.

5.2. Educational Implications

Schools could hold onto the story and recitation and include short opportunities to explain their meaning, discuss a moral choice or to write a personal reflection. Discussion, use of practical examples, and a concise summary by students could be feasible even in situations where technology is scarce. Teacher development should emphasise teaching through questioning, discussion, planning and culturally competent approaches to teaching that are related to day-to-day decision making. Simple media can be used, if they are suitable for the lesson and accessible for all students. These actions are suggested based on local perceptions and not tested by this study. Their effects need to be assessed through direct classroom observation, learning assessed independently and longer follow up.

5.3. Limitations and Further Research

A single educational zone, and 5 of the available schools were included in the research. The ten teacher interviews provide valuable experiences, although lacking in scope. Social desirability, common method bias and construct overlap are potential problems with the cross-sectional student survey, which uses self-reported measures. The manuscript reviewed did not provide pilot details, information about scale reliability, extensive regression diagnostics or verified ethical clearance records. Future research needs to

include documentation of scale development and Cronbach's alpha for each construct, a more expansive sampling, observation design, and longitudinal or intervention design. Direct measures of knowledge and ethical thinking might be able to capture, without oversimplifying, student's accounts of personal development.

6. Conclusion

The Buddhism lessons in the participating Homagama secondary schools were modeled after the existing practices which students continued to appreciate. But there was relatively low reported use of group discussion and the lowest engagement score was for sustained attention during explanation. There were strong associations between teaching methods and engagement and perceived learning effectiveness; however, as this was a study design with a common questionnaire, causal inferences cannot be drawn. Training, time and resource constraints were identified in teacher interviews. There is a culturally sensitive mix of stories, discussion, reflection and practical examples, which provides a reasonable way forward to improvement. These findings are relevant to the schools that participated and do not confirm moral/spiritual changes. Instruments need better documentation and the independent outcome measures are priorities for future research.

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SPV Constructivist Model: Fostering Value Development through School Culture and Personalised Learning

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Abstract: Value development is central to education but often treated as a separate curricular component rather than a systemic, experiential process. Existing models are fragmented, emphasising moral instruction and neglecting the roles of school culture and learner agency. The study introduces the SPV Constructivist Model, which sees value development as emerging from the interaction of School Culture (S), Personalised Learning (P), and Value Competencies (V). Based on constructivist theory, values are viewed as socially constructed through experiences, reflection, and participation in school. The model underwent expert validation via Lawshe's CVR through a two-round Delphi process, ensuring clarity, relevance, and feasibility. The validated framework was turned into a schoolready package that included constructivist learning, culture-based interventions, personalised mentoring, and multi-source assessments such as portfolios, rubrics, and checklists. Findings show the SPV model enhances students' empathy, responsibility, cooperation, and ethics by integrating value learning into daily pedagogical practices. The SPV Constructivist Model reconceptualises personalised learning as a moral process and offers a scalable, evidence-based framework for holistic value education. It provides schools with a flexible system for integrating values into the curriculum, culture, and experiences. The model shifts from transmission-based moral teaching to participatory, reflective value formation.

Keywords: Constructivist pedagogy, Educational innovation, Personalized learning, School culture, Value development

1. Introduction

Contemporary schooling faces pressure to address moral erosion, empathy decline, social polarisation, and ethical ambiguity among students (Nucci, Narvaez, & Krettenauer, 2014). Assessments and climate studies show that academic success alone doesn't guarantee ethical citizenship or social responsibility (OECD, 2018). As a result, education shifts from a content-focused model to a holistic one that includes cognitive, emotional, and moral growth.

Empirical studies show that standalone moral instruction and textbook-based value education have weak transfer to real-life ethical behaviour (Berkowitz & Bier, 2005; Thornberg & Oğuz, 2016). This gap highlights the need for frameworks that embed values in daily teaching, learning, and institutional culture. The present paper introduces the School Culture–Personalised Learning–Value Integration (SPV) Model, grounded in solid empirical and theoretical research.

1.1 Conceptual and Empirical Foundations

School culture, defined as shared norms, beliefs, relational patterns, and leadership practices, is empirically linked to students' social, emotional, and moral outcomes (Deal & Peterson, 2016). Longitudinal studies show that schools with trust, inclusivity, and shared leadership report higher student empathy, cooperation, and ethics (Bryk & Schneider, 2002; Thapa et al., 2013). Research on school climate indicates that relational trust among teachers, students, and administrators predicts moral engagement and prosocial behaviour more than formal curricula (Wang & Degol, 2016). Inclusivity and democratic participation are linked to internalisation of justice and respect for diversity (Fielding, 2012). These findings confirm school culture as a key condition for the development of value, forming the foundation of the SPV Model.

Personalised learning boosts engagement, autonomy, and self-regulation (Pane et al., 2017). When students experience voice, choice, and dialogue, they show higher moral sensitivity and responsibility (Ryan &

Deci, 2020). Reflective dialogue promotes ethical reasoning by helping learners confront moral dilemmas and articulate perspectives (Habermas, 1984; Kohlberg, 1981). Learner autonomy fosters moral agency through decision-making and accountability (Nucci, 2017). Empirical studies confirm personalised pedagogies mediate institutional values into moral dispositions (Darling-Hammond et al., 2020).

Moral development theories emphasise social interaction, empathy, and observational learning.

Kohlberg highlights the evolution of moral reasoning through social and cognitive conflict (Kohlberg, 1984). Gilligan stresses empathy and relationships (Gilligan, 1982). Bandura supports the view that values are learned through observation and reinforcement (Bandura, 1986). The SPV Model combines these views, with school culture as the moral context and personalised learning as the pathway for internalising moral reasoning and ethics.

1. Review Related Literature

Value development is the process by which learners internalise moral, social, civic, and personal values that influence their behaviour, decisions, and interactions. Research indicates values are not just acquired through instruction but built through lived experiences, social participation, reflection, and emotion (Lickona, 1991; Kohlberg, 1984). Modern methods focus on character education, social-emotional learning, and citizenship as ways to foster values. Scholars say this process is highly contextual and shaped by the school environment, not just moral lessons (Halstead & Taylor, 2000). Students implicitly learn values via peer interactions, teacher actions, leadership styles, and norms known as the hidden curriculum.

2.1. Constructivist Perspective on Value Learning:

Constructivist learning theory suggests learners actively build knowledge through interaction with their environment (Piaget, 1972; Vygotsky, 1978). In value education, this means students develop moral understanding via dialogue, dilemmas, cooperative

learning, reflection, and real-life problems. Studies show that strategies like discussion-based learning, service, experiential, and reflective practices foster deeper moral reasoning, empathy, and social responsibility (Dewey, 1938; Narvaez, 2006). Unlike traditional models that focus on memorisation, constructivist methods emphasise internalisation of morals. However, most research has studied cognitive learning, with fewer linking constructivist pedagogy to structured value development.

2.2. School Culture and Value Formation :

School culture encompasses shared beliefs, norms, rituals, relationships, leadership styles, and social expectations within a school community. It influences student behaviour, identity, and values (Deal & Peterson, 1999). Positive cultures trust, inclusivity, fairness, student voice, emotional safety, and collaboration promote ethical behaviour and empathy (Cohen et al., 2009). Negative climates, authoritarian, competitive, and exclusionary, hinder moral growth. Most studies view school culture as background rather than a central factor in shaping moral development, with limited empirical modelling of these cultural influences.

2.3. Personalised Learning and Moral Growth:

Personalised learning uses instructional methods that adapt content, pace, pathways, and assessment to learners' needs, interests, and contexts. It boosts motivation, autonomy, selfregulation, and learner agency (Pane et al., 2015). From a value education view, it fosters responsibility, empathy, respect for diversity, and self-awareness. When students have voice and choice, they often develop a sense of ownership of learning and ethical responsibility. However, most research focuses on academic achievement, engagement, and technology, with few exploring how personalisation influences moral identity, ethical reasoning, or value internalisation.

2.3. Integration of Culture, Personalisation, and Constructivism:

While research exists on constructivist pedagogy, school culture, and personalised learning separately, few studies integrate these into a unified framework

for value development. Scholar's note that values arise from interactions between personal meaning and social contexts, but no comprehensive model explains how school culture and personalised learning work together through constructivist mechanisms to foster value development. This gap highlights the need for an integrated model like the SPV Constructivist Model.

2. Research Gap

Based on the above review, the following gaps emerge:

1. Most studies focus on isolated value education programs, moral lessons, or character modules, with limited emphasis on whole-school models integrating values into daily practices and interactions.
2. While school culture is influential, few studies view it as a primary predictor of value development. There's limited research connecting specific cultural dimensions (e.g., fairness, trust, belonging) with measurable value outcomes.
3. Personalised learning is often studied for cognitive and motivational effects but rarely for ethical and value-based growth. The moral implications of student voice, autonomy, and choice are underexplored.
4. Existing literature treats constructivist pedagogy, school culture, and personalised learning as separate constructs, lacking integrated models explaining their combined effect on value development.
5. Most studies are cross-sectional or descriptive; longitudinal, quasi-experimental, or modeltesting studies are rare in value education.
6. Limited research exists on value development models that reflect diverse socio-cultural realities, especially in non-Western and Indian school contexts.

3. Justification for the Present Study

The study proposes the SPV Constructivist Model, combining School Culture (S), Personalised Learning (P), and Value Development (V) within a

constructivist framework. It explains how values develop through interactions, learner agency, and meaning-making.

3.1. Conceptual Framework and Model Description

Table 1: Conceptual Structure of the SPV Constructivist Model

Component	Dimension	Operational Definition	Key Indicators	Expected Outcomes
S – School Culture	Relational Trust	Quality of teacher–student and peer relationships is characterised by respect, care, and emotional safety	Mutual respect, peer support, teacher empathy	Empathy, respect
	Fairness & Justice	Transparent rules, restorative discipline, and ethical consistency	Equal treatment, restorative practices	Integrity, responsibility
	Student Voice	Student participation in classroom and schoollevel decision-making	Leadership roles, open forums	Agency, civic values
	Inclusion & Belonging	Sense of acceptance irrespective of gender, caste, ability, or background	Diversity acceptance, cooperative learning	Social harmony
	Ethical Leadership	Teachers and leaders as moral role models	Value-based actions	Value internalization
	Home–Community Linkage	Alignment between the school and community values practices	Service learning, parent involvement	Civic responsibility
P – Personalised Learning	Voice & Choice	Learners select tasks aligned with interests and values	Learning menus, project options	Autonomy
	Goal Setting	Personal academic + moral goals	SMART goals	Responsibility
	Mentoring	Individual guidance and reflection	Coaching sessions	Self-awareness
	Flexible Pathways	Differentiated tasks and pacing	Tiered activities	Inclusion
	Reflective Portfolios	Value-based artifacts and reflections	Journals, selfreports	Moral reasoning
V – Value Development	Moral Cognition	Understanding of values	Scenario responses	Ethical judgment
	Moral Affect	Emotional engagement with values	Empathy scales	Compassion

	Moral Behavior	Observable valuedriven actions	Peer reports	Responsible conduct
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Table 1 shows the structure of the SPV Constructivist Model, comprising three interconnected components: School Culture, Personalised Learning, and Value Development. Each has defined dimensions, indicators, and measurement outcomes. School Culture reflects the school's ethos, focusing on trust, fairness, student voice, inclusion, ethical leadership, and community ties, shaping students' moral perceptions and norms. Personalised Learning emphasises learner agency,

mentoring, flexible pathways, and reflection, promoting internalised values over superficial morals. Value Development involves observable outcomes across cognitive, affective, and behavioural areas. This model indicates that value development results from the interaction of contextual, pedagogical, and psychological factors.

Table 2: Constructivist Pedagogical Cycle Embedded in SPV Model

Phase	Description	Teacher Role	Student Role	Evidence Generated
Experience	Real-life dilemmas, stories, service tasks	Facilitator	Active participant	Observation notes
Dialogue	Group discussion and moral reasoning	Moderator	Co-constructor	Discussion logs
Reflection	Personal meaning-making	Coach	Reflector	Journals
Action	Value-based behavior	Encourager	Practitioner	Behavior records
Evidence	Portfolio compilation	Assessor	Self-evaluator	Artifacts

Table 2 shows the constructivist pedagogical cycle that implements the SPV model at the classroom level. Based on experiential and reflective learning, it emphasises the construction of values rather than their transmission. The cycle moves from experience to dialogue, reflection, action, and evidence, promoting active engagement, social meaning negotiation, and

internalisation through real-world application. The teacher shifts from instructor to facilitator and mentor, while students co-construct moral understanding. Multiple evidence forms, like journals and behavioural records, enable assessment triangulation. This cycle embeds value development into everyday practice, ensuring its sustainability beyond isolated moral lessons.

Table 3: Expert Validation Protocol

Step	Purpose	Method	Output
Expert Selection	Content credibility	10–15 experts in education, psychology, values, measurement	Panel list
Round 1 Review	Content relevance	Delphi open-ended feedback	Revised items

Rating	Essentiality judgment	3-point scale: Essential / Useful / Not necessary	Rating matrix
CVR Computation	Content validity	Lawshe's formula: $CVR = (N_e - N/2) / (N/2)$	Item-wise CVR
CVI Estimation	Scale validity	I-CVI, S-CVI	Retained dimensions
Round 2 Review	Consensus	Delphi rerating	Final model

Table 3 details the expert validation protocol used to establish the content validity and robustness of the SPV Constructivist Model. A multi-step Delphi approach allows iterative refinement of constructs and indicators. Expert selection emphasises interdisciplinary representation to encompass pedagogical, psychological, and cultural views. The essentiality judgment process follows Lawshe's methodology, keeping only indispensable elements. This protocol enhances the model's scientific credibility and reduces construct ambiguity. Including CVR and CVI improves scale coherence and internal consistency. Overall, this process ensures the SPV model is not just conceptual but empirically sound.

4. Procedure for Expert Selection, Validation, and Analysis

The SPV Constructivist Model was validated through expert review to assess content, clarity, and context. Because the goal was to evaluate its theoretical and practical validity rather than statistical generalisation, purposive sampling was used. This method is common in content validation, emphasising expertise over random sampling.

Experts were selected based on clear criteria, including at least 5 years of experience in education-related fields, a doctoral degree or a senior position, or a strong research background. Only those willing to participate in multiple review rounds were included to ensure continuity.

Fifteen experts, including educators, psychologists, leaders, and assessment specialists, formed the validation panel, aligning with Lawshe's CVR recommendation of 8- 10 experts. This diverse group minimised bias and enabled a comprehensive evaluation of the SPV model from multiple perspectives.

The validation used a two-round Delphi technique combined with Lawshe's CVR method. The Delphi approach was chosen to facilitate structured, anonymous communication among experts, reducing bias and promoting independent judgment. In the first round, experts received a detailed description of the SPV model, its framework, constructs, dimensions, and indicators. They evaluated clarity, coherence, grounding, and relevance, and provided open feedback on redundancy, ambiguity, missing parts, and applicability.

Responses from the first round were subjected to thematic analysis. Suggestions were examined, and revisions were made by clarifying ambiguous terms, merging overlapping constructs, and refining indicators for precision. Context-specific examples improved interpretability, ensuring the model was rigorous, understandable, and practical for real schools.

The second validation round used Lawshe's three-point scale: "Essential," "Useful but not essential," and "Not necessary." Experts judged whether each construct was vital for showing how school culture and personalised learning interact. This step was key because it had experts differentiate between appealing ideas and truly necessary elements for the model.

The Content Validity Ratio (CVR) for each construct was determined using Lawshe's formula: $CVR = (N_e - N/2) / (N/2)$, where N_e is the number of experts who classified the item as essential, and N is the total number of experts. CVR values range from -1 to +1, with higher positive scores indicating stronger expert

consensus. These CVR values were then compared with the critical thresholds suggested for a panel of fifteen experts. Constructs that met or exceeded the threshold were kept, those slightly below were revised, and those well below were considered for removal.

In addition to CVR, the Content Validity Index (CVI) was calculated to assess the model's overall coherence. The Item-Level CVI (I-CVI) indicates the proportion of experts who found an item relevant, whereas the Scale-Level CVI (S-CVI) is the average of all I-CVI scores. Together, these indices offer a comprehensive assessment of the SPV model's representativeness and conceptual consistency.

Validation decisions combined quantitative results, such as CVR and CVI, with expert qualitative feedback. Constructs with borderline CVR weren't dismissed if deemed important by experts; instead, they were revised for clarity and relevance. This mixed-method approach ensured statistical validity and contextual accuracy.

The validation process led to a refined SPV Constructivist Model with clearly defined constructs, more robust operational definitions, and better alignment with classroom realities. Redundant and ambiguous elements were removed or restructured to avoid construct inflation. This careful, expert-led validation guarantees that the SPV model is not only conceptually sound but also empirically justified, educationally meaningful, and practically feasible.

Table 4: Lawshe’s Content Validity Ratio (CVR) Format

Item No.	Construct	Ne (Essential)	N (Total Experts)	CV R	Decision
1	Student Voice	12	15	0.60	Retain
2	Reflective Journaling	14	15	0.87	Retain
3	Service Learning	9	15	0.20	Revise

Table 4 details how to establish content validity for each SPV model construct. It calculates CVR for each item, keeping only expert-endorsed components.

Decision rules (retain, revise, discard) ensure transparency and prevent construct inflation, confirming each dimension's relevance. CVR decisions enhance the psychometric quality of the instruments for educational research and school use.

Table 5: Instruments Developed Under SPV Model

Tool Name	Purpose	Respondents	Domains	Scale Type
School Culture for Values Index (SCVI)	Measure culture	Students, teachers	Trust, fairness, inclusion	Likert 5point
Personalised Learning for Values Rubric (PLVR)	Classroom observation	Teachers	Voice, mentoring, choice	4-point rubric
Value Portfolio (VDP)	Behavioural evidence	Students	Reflection, action	Artefactbased
SPV Fidelity Checklist	Implementation check	Coordinators	Cycles, mentoring, rituals	Yes/No

Table 5 illustrates tools for the SPV Constructivist Model across levels: institutional (SCVI), classroom (PLVR), student (VDP), and system (SPV Fidelity Checklist). This multi-instrument approach addresses single-source measurement issues by combining self-reports, teacher observations, and artefact-based evidence, enabling triangulation and increasing reliability. It shifts assessment from abstract values to observable moral actions through behavioural and reflective evidence.

Table 6: 12-Week SPV School Implementation Plan

Phase	Weeks	Activities	Stakeholders	Outputs
Orientati on	1–2	Training, baseline assessment	Teachers, students	Pretest data

Classroom Cycles	3–8	Weekly constructivist value cycles	Teachers, mentors	Portfolios
Culture Activation	9–10	Assemblies, peer mediation	Student leaders	Culture evidence
Evaluation	11–12	Posttest, exhibition	All	Impact report

Table 6 presents a phased, time-bound plan for implementing the SPV model in schools. It progressively builds capacity, reduces resistance, and maintains fidelity. The orientation phase establishes clarity and baseline data; the classroom cycle embeds values into daily learning; the culture activation extends these into rituals and peer practices; and the evaluation phase ensures accountability and refinement. This framework makes the SPV model scalable and adaptable across various educational settings.

5. Research Gaps Addressed by SPV Model

The SPV Constructivist Model fills gaps in existing literature by offering a comprehensive, learner-centred framework that integrates school culture and constructivist pedagogy to reconceptualise value development as systemic. This enhances its relevance and necessity for modern education research.

6. Findings

The present study aimed to conceptualise, validate, and operationalise the SPV Constructivist Model for fostering value development through school culture and personalised learning. The findings are organised under four major themes.

1. Expert validation with the Lawshe CVR method showed strong agreement on the core constructs of the SPV model. Dimensions like relational trust, student voice, inclusion, mentoring, reflective practices, and moral behaviour had CVR values above the threshold, supporting their inclusion. This indicates that the SPV components are theoretically sound, relevant, and pedagogically meaningful.
2. Pilot implementation showed the SPV model is feasible within existing school structures. Teachers found constructivist cycles (experience–dialogue–

reflection–action–evidence) compatible with routines. School leaders noted that culture-focused strategies such as student-led assemblies, restorative circles, and mentoring could be implemented without major infrastructure changes.

3. Analysis of portfolio evidence, teacher observations, and student reflections indicated enhancements in students' empathy, responsibility, cooperation, and self-regulation. Unlike conventional value education methods that rely on declarative moral knowledge, the SPV model enabled students to demonstrate their values through tangible behaviours and reflective stories.
4. The integration of school culture, personalised learning, and constructivist pedagogy fostered systemic coherence. Instead of isolated interventions, the SPV model aligned institutional practices, classroom strategies, and learner experiences towards a shared values development agenda.

7. Discussion

This study supports the idea that value development is socially constructed, context-dependent, and experience-mediated. The SPV Constructivist Model emphasises that school culture and personalised learning are key for moral internalisation, beyond just curriculum. Values are best fostered through daily practices, relationships, and student agency, aligning with constructivist views of meaning-making through experience. The model redefines personalised learning as a moral process in which student voice, choice, and mentoring promote responsibility, empathy, and ethics, thereby broadening the scope of research. Using multiple evidence sources, such as portfolios, observations, and reflections, improves methodological rigour and validity by reducing reliance on self-reports. Overall, it shifts value education from a subject to a systemic, relational, and experiential process.

8. Limitations

Despite its strengths, the current study has limitations. First, validation primarily relied on expert judgment, which, while systematic, can be biased. Including a diverse panel with policymakers and parents could improve validity. Second, the pilot was

limited in duration; value development is longitudinal, and short-term interventions may not capture the true depth of moral internalisation. Third, the study was conducted in a few school settings; cultural and socioeconomic factors may affect applicability elsewhere. Fourth, while the SPV model includes behavioural evidence, some value dimensions, such as moral identity and internal ethical conflict, are hard to measure objectively. Fifth, the quasi-experimental design limits causal certainty compared to randomised trials.

9. Further Scope for Modification and Extension

The SPV Constructivist Model is a flexible framework with multiple future development paths:

1. Tailoring to specific socio-cultural contexts like rural, multilingual, tribal, or inclusive settings with context-sensitive indicators.
2. Incorporating digital portfolios, AI-supported mentoring, and analytics dashboards for personalisation, monitoring, and scalability.
3. Conducting long-term studies over multiple academic years to assess the sustainability of value internalisation and identity.
4. Integrating parents, community leaders, and organizations into the value ecosystem to create moral learning communities.
5. Adapting the model for teacher training, accreditation, and policy integration.
6. Using CFA, SEM, and IRT to improve the statistical robustness of instruments.

10. Conclusion

The study proposed and validated the SPV Constructivist Model as a framework for promoting value development through the interaction of school culture and personalised learning. Based on constructivist principles, it sees value education as a systemic, relational, and experiential process embedded in daily school life, integrating school culture, personalised learning, and moral competencies for a comprehensive approach to ethical and character education.

The validation process confirmed the model's robustness and relevance, ensuring each dimension has pedagogical and psychological significance. Its focus on multi-source evidence through portfolios, behavioural indicators, and observations addresses concerns in value education research, which often depends on self-reports. This enhances the model's credibility and applicability.

The SPV framework redefines personalised learning as a moral and social process, emphasising student voice, agency, mentoring, and reflection to promote values like responsibility, empathy, and integrity. It treats school culture as central, highlighting trust, fairness, inclusion, and ethical leadership as key to shaping students' moral identities.

The SPV model offers schools a ready-to-use structure that aligns value education with routines, leadership, and pedagogy. Its phased approach, fidelity tools, and adaptable indicators suit various educational contexts. It bridges theory and practice, providing a replicable, context-sensitive solution to challenges in moral and civic education.

The SPV Constructivist Model shifts value education from moral transmission to participatory, context-based moral learning. Embedding values in learners' experiences and school culture, it aims to develop ethically grounded, socially responsible citizens. Future research can refine and expand this framework to enhance holistic, humane education.

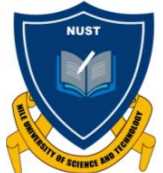
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Cognitive Overload or Motivational Anchor? Evaluating AI-Integrated 5E Science Instruction in Grade 7 and 8 Classrooms via a Quasi-Experimental Crossover Design

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Abstract: Concerns regarding decreased attention spans associated with modern digital media consumption challenge traditional direct teaching. This study evaluates a multimedia-integrated teaching method on Grade 7 and 8 students at Miza Educational Institute in Hulhumalé, Maldives. Using a quasi-experimental crossover design, 115 experimental observations were gathered from 91 unique students, with participants, crossing over to experience both the experimental and control conditions. The intervention included an AI-generated video hook, direct instruction, a summary video, and an immediate retrieval quiz. Analyzed via linear mixed-effects modeling (LMM), results revealed a profound developmental interaction effect driven by intrinsic cognitive load. For Grade 7 (low intrinsic load), multimedia integration acted as an effective motivational anchor, yielding a statistically significant improvement in immediate retrieval scores. Conversely, for Grade 8 (high intrinsic load), the data suggests that the intersection of high element interactivity and the transient information effect likely induced cognitive overload, acting as the primary explanatory hypothesis for the performance drop. In this context, the multimedia appeared to act as seductive details, resulting in significantly higher immediate retrieval scores for the traditional direct instruction cohort. AI-generated multimedia must be rigorously calibrated to learners' cognitive maturity and the syllabus's intrinsic difficulty.

Keywords: Educational Technology, Science Education, Middle School Education, Adolescent Learning, 5E Instructional Model

1. Introduction

Smartphone usage is embedded in every aspect of modern daily life, including communication, information access, and entertainment. The last decade has witnessed a substantial rise in smartphone utilization among children and adolescents (Sohn et al., 2019). The ubiquitous nature of smartphones has raised significant concerns regarding excessive usage and addiction, making its impact on cognitive and psychological well-being a critical focus of contemporary research. (Amalakanti et al., 2024). Adolescents represent a particularly vulnerable demographic for smartphone addiction, often exhibiting a profound psychological attachment wherein the device is perceived as an extension of their own identity (Cha & Seo, 2018). Short-form videos have quickly become a staple of adolescents' daily routines, but excessive consumption presents significant challenges in educational contexts. Addiction to these platforms is consistently linked to increased anxiety, chronic procrastination, and overall declines in academic achievement. (Xiong et al., 2026). Furthermore, literature suggests that extensive internet exposure may influence cognitive processing patterns and underlying neural networks, presenting new challenges for formal education and exam preparation (Firth et al., 2019). Furthermore Ward et al. (2017) theorized a cognitive "brain drain" effect, where the mere physical presence of a smartphone may reduce an individual's available working memory capacity and fluid intelligence. Crucially, this depletion of cognitive resources occurs subconsciously, even in the absence of active distractions or conscious thoughts regarding the device. According to Mona et al. (2026), short-video addiction (SVA) is associated with significant cognitive and behavioral deficits, though self-control serves as a critical protective factor against vulnerabilities like impulsivity and boredom.

Nadeem et al. (2020) suggest that traditional didactic teaching methods are no longer inclusive, as Generation Z expects instructional novelty. Furthermore, some educators observe that modern students frequently struggle with sustained focus; concerns exist that chronic digital media consumption may contribute to shortened attention spans, potentially reducing the efficacy of traditional chalk-and-talk methods (Kaushik et al., 2024). This

pedagogical crisis is particularly acute in science education, where students increasingly struggle to achieve deep conceptual understanding (Solikah, 2026). This creates a direct conflict with modern educational mandates. Contemporary curricula ranging from the Maldives National Curriculum Framework (National Institute of Education, 2015) to broader international benchmarks (Department for Education, 2013; Ministry of Human Resource Development, 2020) universally demand higher-order cognitive capacities, such as critical thinking and complex problem-solving. Fulfilling these rigorous goals in Maldivian classrooms can be hindered when students experience cognitive fatigue, making it difficult for them to engage in the deep, analytical inquiry that science education requires.

It is evident that the usage of technology among students acts as a bottleneck to achieving contemporary educational goals; simultaneously, however, it serves as a powerful tool to make the teaching and learning process both efficient and effective. Educators should understand this paradox and be careful enough to align teaching methodologies to match the cognitive realities of Generation Z (Mihelič & Culiberg, 2026). Rather than discarding the 5E instructional model (Bybee et al., 2006), which provides a robust foundation to consolidate students' knowledge and skills, educators can adapt and optimize it to contemporary cognitive and technological realities. Through the strategic incorporation of digital media, traditional educational framework can be recalibrated to effectively serve the modern educational goals (Mishra & Koehler, 2006). The aim of this study is to investigate the efficacy of adapting the 5E Instructional Model through video-integrated direct instruction. By utilizing short-video summary hooks during the initial phases of instruction, this research seeks to determine if such targeted multimedia interventions can successfully capture fractured attention and enhance overall science comprehension among modern adolescent learners.

1.1. Background to Study

In the Maldives, the secondary education framework follows a strict pedagogical progression; students build their foundational knowledge under the Maldives National Syllabus through Grade 8 before transitioning to the Cambridge International General

Certificate of Secondary Education (IGCSE) and the Pearson Edexcel International Advanced Level (IAL) in their upper secondary years (National Institute of Education, 2015; Ministry of Education, 2019; Department of Public Examinations, n.d.) (see Table 1).

Table 1. Progression of Science Education Structure and Subjects across School Phases and Key Stages in Maldives (National Institute of Education, 2015).

Phase	Key Stage	Grades	Science Education Structure & Subjects
Foundation	—	LKG, UKG	Environment, Science & Technology (Integrated approach across learning areas)
Primary	Key Stage 1	Grades 1, 2 & 3	Science (Core subject)
Primary	Key Stage 2	Grades 4, 5 & 6	Science (Core subject)
Lower Secondary	Key Stage 3	Grades 7 & 8	Science (Core subject including Physics, Environmental Science, Chemistry & Biology)
Lower Secondary	Key Stage 4	Grades 9 & 10	Electives (Must select at least one subject from the KLA Environment, Science & Technology out of 4 chosen electives): • Physics • Chemistry • Biology • Marine Sci (Marine Science) • Environ. Sci (Environmental Science) • Combined Science
Higher Secondary	Key Stage 5	Grades 11 & 12	Electives (Choose any 3 subjects): • Physics • Chemistry • Biology • Marine Sci (Marine Science)

Miza Educational Institute in Hulhumalé supports this robust academic system by providing small group classes for students from both local and international schools and preparing them for the school and national and international examinations. The institute’s teaching objectives align with the national educational goals. It starts with the Maldives National Syllabus for Grades 1 through 8 then moves to the Cambridge IGCSE for Grades 9 and 10 and ends with the Pearson Edexcel IAL for Grades 11 and 12 . (National Institute of Education, 2015)

In this educational context this study looks specifically at students in Grades 7 and 8 learning science according to the Maldives National Syllabus. This stage of education requires a cognitive shift. Students must transition from passive observation to abstract thinking and active inquiry to grasp complex concepts (National Institute of Education, 2015). To learn these basic science ideas, students need to stay focused and think for a long time. For contemporary adolescents, whose attention is frequently fragmented by digital media (Firth et al., 2019), sustaining the focus required to process and retain scientific material presents a significant pedagogical challenge (Kaushik et al., 2024).

To address this pedagogical dilemma, instructional strategies may need to account for the digital consumption patterns of the contemporary “internet-savvy generation” (Jacobs et al., 2025). Delivery methods can be modified to accommodate potential fluctuations in middle school students’ attention spans. The proposed instructional method is not a complete abandonment of the traditional teaching methods but rather an optimized version of the 5E instructional framework (Bybee et al., 2006) reinforced by short video engagement hook and immediate retrieval practice.

1.2. Statement of the Problem

According to the National Curriculum Framework of Maldives (National Institute of Education, 2015) studying science equips students to become critical thinkers who appreciate scientific methodologies and act as informed decision-makers. This foundational knowledge empowers them to actively contribute to sustainable development and navigate complex ethical, moral, and environmental issues within their

communities. Educators frequently struggle to fulfill these pedagogical goals due to evolving media consumption habits among Generation Z, potential challenges with sustained attention, and the varying efficacy of traditional didactic methods (Jacobs et al., 2025). This results in poor memory retention and a failure to grasp foundational science concepts, creating substantial barriers to achieving national educational goals (Wei et al., 2026).

While the 5E Instructional Model provides a proven framework for scientific inquiry, its traditional application often lacks the targeted multimedia pacing that may be necessary to capture and sustain student engagement in modern digital contexts. Furthermore, there is a limited number of studies related to optimizing this model for the evolving media habits of modern adolescents. This study aims to fill the research gap by adjusting the 5E Instructional Model to better engage contemporary learners using a short video engagement hook, short video summary, and immediate retrieval practice.

By aligning this model with the cognitive habits of Generation Z and Alpha learners, this study further investigates the potential to efficiently achieve national science education goals in the Maldives.

1.3. Research Objectives

1.3.1. General Objective

The primary objective of this study is to critically evaluate the impact of a structured multimedia instructional sequence on the immediate post-lesson performance and engagement of Grade 7 and 8 science students.

This sequence integrates cognitively stimulating multimedia hooks and visual summaries around a core of direct instruction, which is subsequently followed by immediate retrieval practice.

1.3.2. Specific Objectives

1. To systematically compare the immediate post-lesson quiz marks between an experimental group and a control group to determine academic efficacy.

2. To investigate the pedagogical effectiveness of intentional content sequencing by isolating visually rich, AI-generated multimedia at the boundaries of a lesson to prevent extraneous cognitive load.

1.4. Hypotheses / Research Questions

Null Hypothesis (H_0) There is no statistically significant difference in immediate post-lesson quiz scores between middle school science students taught using the structured video-integrated instructional model and those taught using traditional direct teaching.

Alternative Hypothesis (H_1) There is a statistically significant difference in immediate post-lesson quiz scores, favouring students taught using the structured video-integrated instructional model compared to traditional direct teaching.

2. Literature Review

2.1. Theoretical Framework

The core principle of Cognitive Load Theory is that human working memory possesses a strictly finite capacity for processing simultaneous information. When learners face unnecessary mental demands such as ineffective instructional design or environmental distractions extraneous cognitive load increases, ultimately obstructing comprehension and knowledge transfer.

Conversely, processing intrinsically complex scientific concepts requires productive mental effort, known as germane load.

Therefore, to optimize learning, instruction must be carefully designed to minimize irrelevant cognitive strain while maximizing the mental resources dedicated to meaningful processing, ensuring the total demand never exceeds the learner's available cognitive capacity. (Sweller et al., 2019) (see Figure 1)

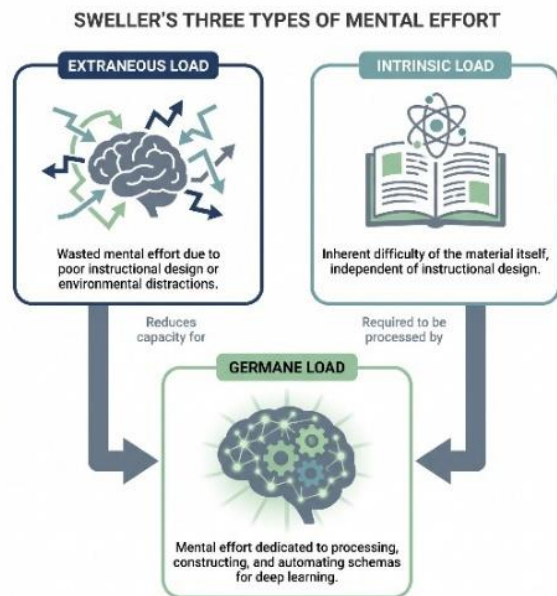


Figure 1. The three types of mental efforts (Sweller et al., 2019)

Literature suggests that excessive use of digital devices may strain the baseline working memory capacity of some middle schoolers. Empirical research identifies excessive short-video consumption as a potential contributing factor to this cognitive fatigue (Li et al., 2026).

To understand the necessity of this 'working memory' in learning, it is essential to critically examine Evolutionary Educational Psychology (Geary, 2008) (see Figure 2 and 3). According to Geary (2008), humans possess 'biologically primary' cognitive domains that evolved to automatically and effortlessly process information routinely encountered throughout our evolutionary history.

However, the ability to learn evolutionary novel information (biologically secondary) requires learners to actively inhibit these automatic folk systems and instead engage in controlled, effortful problem-solving (Geary, 2008). Furthermore, Geary (2008) and Sweller (2008) explain that these processing skills demand higher cognitive load or working memory.

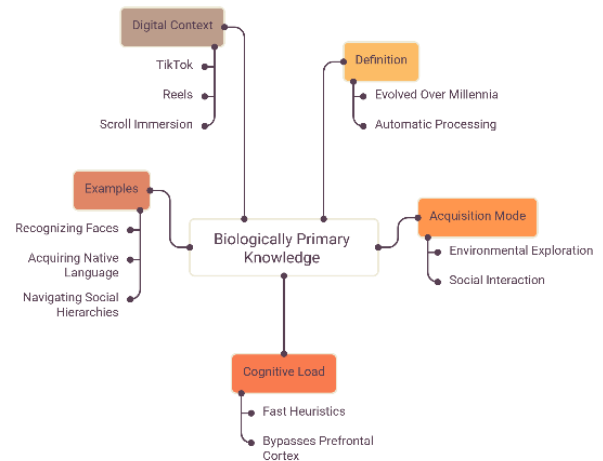


Figure 2. Mind map illustrating the cognitive architecture, evolutionary characteristics, and modern digital context of Biologically Primary Knowledge (Adapted from Geary, 2008). Theoretical Framework: This visualization maps out information processed automatically through evolutionary adaptation and modern digital platforms, contrasting with biologically secondary knowledge.

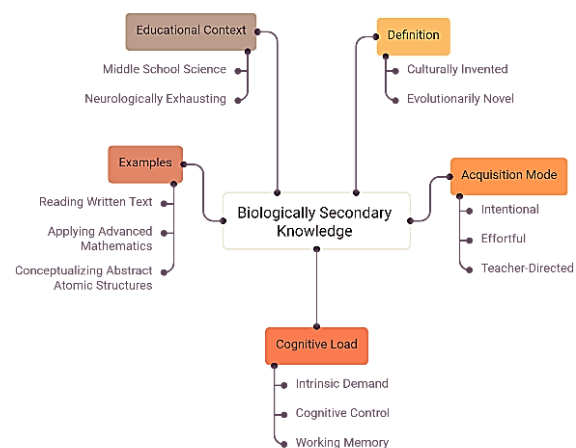


Figure 3. Mind map illustrating the cognitive architecture, acquisition mode, and educational context of Biologically Secondary Knowledge (Adapted from Geary, 2008). Theoretical Framework: This visualization maps out information that is culturally invented, evolutionary novel, and intentionally acquired, highlighting the high cognitive load and working memory demands characteristic of middle school science instruction.

The middle school science framework outlined in the Maldives National Syllabus (National Institute of Education, 2015) consists entirely of complex, biologically secondary knowledge across biology, chemistry, and physics. Concepts such as atomic structure, Hooke's Law, the conservation of energy, and cellular transport represent abstract, evolutionary

novel information. The biological bottleneck in achieving these curricular demands is grounded in developmental neuroscience. As Blakemore and Choudhury (2006) highlight, core executive functions such as inhibitory control, processing speed, working memory, and decision-making are not fully mature in middle schoolers; rather, they continue to undergo significant development throughout adolescence. Luna et al. (2010) further elaborate on this neurological burden, noting that the prefrontal cortex networks responsible for cognitive control remain highly vulnerable and transitional during this age. Consequently, forcing Grade 7 and 8 students to process highly complex, secondary science concepts places an immense demand on their still-developing working memory, rendering the process inherently stressful and neurologically exhausting. While this represents the natural developmental context of adolescent working memory, these inherent limitations are potentially exacerbated by broader generational trends of excessive digital media consumption and short-form video habits (Firth et al., 2019; Mona et al., 2026).

While many contemporary adolescents face challenges maintaining sustained focus during abstract science lessons, Alruwaili (2025) notes that they often find it difficult to disengage from short video platforms such as TikTok, Instagram Reels, and YouTube Shorts. This cognitive paradox can be addressed by Geary's (2008) Evolutionary Educational Psychology. These platforms focus entirely on delivering high-intensity, biologically primary cues, such as dynamic movement, bright colors, human faces, and simple social narratives. Because the human brain evolved to process these specific environmental cues automatically, consuming this media bypasses the prefrontal cortex's executive functions. Consequently, it triggers a state of "scroll immersion," a form of habitual, low-intention engagement where users process information with minimal cognitive effort and lose temporal awareness (Alruwaili, 2025).

According to Mayer's (2021) Cognitive Theory of Multimedia Learning (CTML), human brain processes visual imagery and verbal/auditory information through two separate, distinct channels, which have strict, independent capacity limits. Furthermore, this describes how individuals process

information through five distinct mental stages. Initially, learners filter specific words and images from the provided material to focus on what is most relevant. These isolated elements are then structured into logical verbal and visual frameworks within the mind. The final stage involves merging these frameworks with an individual's existing knowledge to ensure deep understanding. Furthermore, the theory identifies three types of cognitive demands that impact a person's limited mental capacity during this process. Effective learning depends on managing unnecessary distractions while supporting the essential effort required to organize and interpret new information. (see Figure 4)

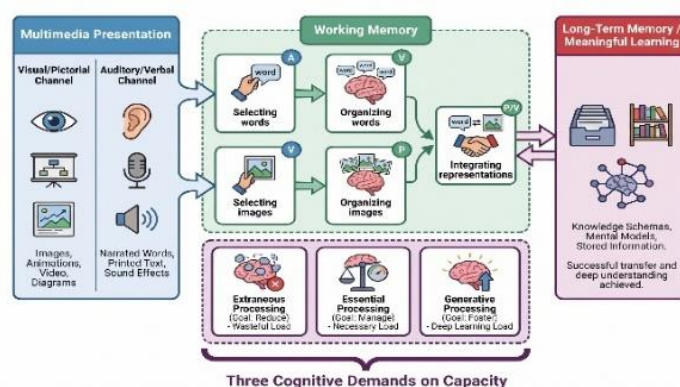


Figure 4. Cognitive Theory of Multimedia Learning
(Adapted from Mayer, 2021)

To fulfill the mandates of the National Curriculum Framework of Maldives (National Institute of Education, 2015) and cultivate the 21st century competencies such as critical thinking, collaboration, communication, creativity, culture, and connectivity, students must successfully navigate high intrinsic cognitive load, as scientific inquiry inherently demands abstract conceptualization (Solikah, 2026; Sweller, 2010). While traditional didactic teaching has long been effective, it may encounter limitations when trying to sustain the attention of modern adolescent learners (Kaushik et al., 2024). Given students' increasing interaction with digital devices and the potential cognitive impacts of excessive short-video consumption, educators should consider updating their instructional methodologies to better align with these evolving learning preferences. (Chardonens, 2025). According to Mayer's (2021) Cognitive Theory of Multimedia Learning, presenting information through both the visual and auditory channels simultaneously creates a highly engaging, multi-sensory learning

environment. Theoretically, integrating structured, short-duration multimedia into science curricula should provide the necessary stimulus to support the focus of contemporary learners, offering a valuable complement to conventional instructional methods (Slemmons et al., 2018).

When educators attempt to incorporate engaging multimedia elements, a cognitive bottleneck often occurs due to the inclusion of seductive details (Harp & Mayer, 1998; Sundararajan & Adesope, 2020). According to those studies, seductive details are “interesting and irrelevant details”. When instructional materials include seductive details, learners demonstrate a decreased capacity to retain essential structural concepts and exhibit poorer performance when applying those core ideas to problem-solving tasks (Sundararajan & Adesope, 2020). The internal mechanism of the seductive details effect can be understood as a catastrophic cognitive crash. During high-intrinsic science lessons, a student's working memory is operating near full capacity. Introducing non-essential hooks, such as unrelated humour, generates an overwhelming surge of extraneous cognitive load that monopolizes the learner's remaining mental resources, this sensory overload actively starves the brain of the capacity needed for germane processing, resulting that no meaningful schema construction can occur and fundamentally disrupting the transfer of scientific knowledge. (Park et al., 2011)

To make the video an efficient educational material, the seductive details should be completely removed and fully aligned with the Signalling and Segmenting principles (Mayer, 2021). Effectiveness of this was empirically shown by the study by Ibrahim et al. (2012). van Gog (2021), explained about the Taxonomy of Instructional Signaling Cues in detail (see Table 2).

Table 2. Taxonomy of Instructional Signaling Cues (Adapted from van Gog, 2021)

Cue category	Specific signaling technique	Instructional phase
Text - Based Cues	Preview Summaries	Highlights the structural organization of the material before the lesson begins.

Subtle Text Cues	Explicit Verbal Directives	Uses sentences inserted directly into the text to explicitly guide attention to an accompanying picture.
	Font Emphasis	Draw attention to key terms using bolding or specific font colors (e.g., red text for core vocabulary).
	Vocal Intonation	Emphasizes structural spoken text through deliberate changes in the instructor's vocal pitch or volume.
	Extrinsic Additions	Directs spatial attention by overlaying new elements, such as graphical arrows, onto a diagram.
	Intrinsic Modifications	Modifies existing visual elements without adding new information (e.g., dynamically changing the color of an anatomical label as it is spoken).
Visual/ Picture Cues	Shading and zooming	Increases visual saliency by temporarily dimming peripheral elements or zooming in to isolate the specific focal point.
	Color Coding	Facilitates integration by matching the exact color of a specific term in the text to its corresponding structure in the diagram.

According to Mayer and Pilegard (2014), it is easier to learn when multimedia learning material is broken into segments other than delivering as a continues unit. Furthermore, they emphasise that it contributes to reducing the cognitive load. Especially the students who have lower levels of prior knowledge such as middle school students, these segmented animation videos are proven to be effective (Spanjers et al., 2010). Educators should introduce system-paced interruptions that strictly segment the video at each discrete procedural step (Biard et al., 2018).

The pedagogical necessity for this strict segmentation is driven by a phenomenon defined in cognitive psychology as the transient information effect (Wong et al., 2012). Unlike static physical diagrams or text, digital video presents information that is inherently fleeting. Consequently, learners must hold earlier

visual and auditory information in their limited working memory while simultaneously attempting to process new, incoming digital stimuli. Wong et al. (2012) demonstrated that when the intrinsic complexity of the academic material is high, this continuous, transient flow of multimedia information theoretically saturates working memory capacity, potentially leading to cognitive overload and a catastrophic loss of comprehension. Therefore, anticipating and mitigating this transient information effect is a critical prerequisite when engineering multimedia for complex middle school science curricula.

For decades, the BSCS 5E Instructional Model has dictated the sequence of science education, shaping how curricula are designed and delivered from individual lessons to entire academic programs. The traditional framework guides students through a constructivist cycle: it begins by capturing interest and accessing prior knowledge (Engagement), allows for hands-on investigation (Exploration), provides direct conceptual instruction (Explanation), extends understanding through application (Elaboration), and concludes by assessing learner progress (Evaluation). (Bybee et al., 2006)

Traditional constructivist teaching procedures often proceed as though working memory possesses no relevant limitations when processing novel information. Consequently, inquiry-based instruction places a substantial burden on cognitive resources, relying on the assumption that a learner has an uncompromised working memory capacity to handle the load (Kirschner et al., 2006). However, in the modern context, students' baseline attention may be challenged by the extensive use of digital media and short-video platforms (Li et al., 2026; Mona et al., 2026). This is where the traditional 5E Instructional Model may encounter a pedagogical bottleneck. While contemporary learners are highly technologically fluent, frequent digital immersion can sometimes compete with the cognitive resources required for sustained critical thinking and deep analytical processing (Shatto & Erwin, 2016). Consequently, for educators striving to maintain meaningful classroom focus, these evolving media habits present both instructional barriers and novel avenues for teaching. (Rothman, 2016) Generation Z learners function as "observers" who overwhelmingly

prefer acquiring new information through digital video content rather than traditional, text-heavy instruction. Furthermore, they favor intrapersonal, self-paced learning environments that allow them to process concepts independently before engaging in collaborative tasks. Consequently, traditional instructional frameworks must integrate targeted multimedia and self-directed pacing to remain pedagogically viable for this demographic (Seemiller & Grace, 2017).

To address these cognitive barriers and changing digital habits of the students, this study proposes an adaptation of the 5E Instructional Model where the post-lesson multiple-choice quiz serves a dual pedagogical purpose: functioning as the formal "Evaluate" phase while simultaneously providing a quantitative metric for immediate retention. The integration of this quiz leverages the "testing effect" (Roediger & Karpicke, 2006), a cognitive phenomenon where taking a memory test goes beyond merely assessing knowledge to act as a powerful means of improving learning and enhancing later retention. Because the working memory of contemporary adolescents is compromised by rapid decay, this evaluation phase must occur immediately; implementing such retrieval practice has been systematically proven by Agarwal et al. (2021) to yield robust learning benefits across a wide range of real-world classroom settings and educational levels.

2.2. Review of Related Empirical Studies

The theoretical limits of working memory outlined by CTML are practically reflected in students' digital viewing habits. In a landmark empirical analysis of nearly seven million instructional video sessions, Guo, Kim, and Rubin (2014) identified a strict biological boundary for multimedia engagement, establishing what is now commonly referred to as the 'Under-6 Rule.' Their data demonstrated that student engagement remains optimal only for the first six minutes of a video; beyond this threshold, attention drops precipitously, and learners begin to disengage or abandon the material entirely, regardless of the video's total length or production quality. While this metric was originally established through massive open online courses (MOOCs), it provides a crucial cognitive baseline for middle school environments. If adult learners experience catastrophic cognitive fatigue after

six minutes of continuous digital instruction, the attention-depleted adolescent brain requires even stricter temporal boundaries to prevent extraneous load when integrating multimedia into formal science education.

Recent research underscores the value of concise multimedia in middle school science education. For instance, Slemmons et al. (2018) demonstrated that while shorter instructional videos produced only marginal gains in immediate assessment scores, they significantly enhanced students' self-reported focus and classroom engagement. However, because this study examined video pacing strictly within a flipped classroom setting, it leaves open the question of how targeted, short-form multimedia might perform when actively integrated into the structured phases of the 5E instructional model.

Recent research confirms that pairing structured inquiry frameworks with digital multimedia significantly enhances secondary science education. For instance, Guruloo et al. (2024) demonstrated that delivering a structured inquiry curriculum through smartphone-based virtual laboratories significantly improved students' science process skills compared to conventional teaching. Crucially, the researchers concluded that these academic gains stemmed from the structured pedagogical design rather than the mere presence of technology. However, while this highlights the value of modernizing inquiry-based learning with digital tools, the intervention focused heavily on extended laboratory skill acquisition. Because it did not address cognitive fatigue or utilize short video hooks and immediate retrieval quizzes, it leaves a critical gap regarding how structured inquiry must be adapted for immediate knowledge retention in attention-depleted learners.

To directly combat attention decay during digital instruction, Szpunar et al. (2013) demonstrated that interpolating lectures with frequent memory tests significantly reduces mind-wandering and lowers subjective cognitive demand. Their experiments confirmed that short-burst quizzes successfully sustain task-focused attention and tangibly improve overall retention. However, because this research evaluated standard lecture formats, a critical gap remains regarding how immediate retrieval practice functions when specifically integrated into a

constructivist 5E science framework to secure knowledge for attention-depleted middle schoolers.

To synthesize these theoretical perspectives, this study proposes a linear conceptual framework (see Figure 5) that maps the instructional sequence to expected cognitive outcomes. The intervention begins with the Instructional Method, directly comparing a video-integrated 5E model (Bybee et al., 2006) against traditional direct instruction. Within the experimental condition, specific Multimedia Features—such as AI-generated aesthetics, strict temporal segmenting under six minutes (Guo et al., 2014), and targeted visual signaling (van Gog, 2021)—are applied to optimize information delivery. Grounded in the Cognitive Theory of Multimedia Learning (Mayer, 2021), these features are designed to actively Manage Cognitive Load by minimizing extraneous distractions while helping students navigate the intrinsic difficulty of the science syllabus (Sweller et al., 2019). Ultimately, this deliberate load management theoretically mitigates the risk of working memory saturation, which directly impacts Academic Retention, measured quantitatively in this study through immediate conceptual recall on post-lesson multiple-choice quizzes.

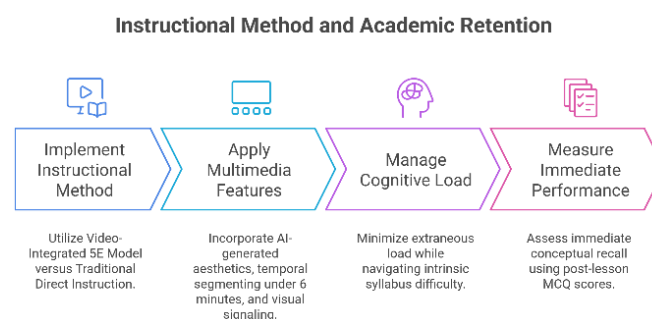


Figure 5. Conceptual framework illustrating the theoretical progression from instructional method to academic retention via multimedia features and cognitive load management.

2.3. Research Gap

While existing literature confirms that short-form multimedia enhances engagement (Slemmon, 2018), structured inquiry frameworks boost process skills (Guruloo et al., 2024), and immediate quizzes mitigate cognitive fatigue (Szpunar et al., 2013), these pedagogical mechanisms are largely studied in isolation. A critical gap exists regarding the synthesis of these elements within contemporary secondary science education. Specifically, limited empirical

research was identified that adapts the traditional 5E Instructional Model by integrating short-video hooks and immediate multiple-choice retrieval practice as a unified mechanism to support the engagement of modern adolescent learners. Therefore, this study addresses this gap by quantitatively evaluating how a multimedia-integrated 5E framework impacts the immediate post-lesson performance of Grade 7 and 8 science students.

3.Methodology

3.1. Research Design

Since this was conducted in a real – world context at Miza Educational Institute, Hulhumale’, the study is done as a quantitative, quasi-experimental non-equivalent groups design, because it utilized pre-existing classes, making true random assignment of students impossible. In this experiment the independent variable was the instructional delivery method where the experimental group received the video-integrated 5E model and the control group received traditional direct teaching. The dependent variable was immediate post-lesson performance, measured using post-lesson quiz scores. (see Table 3)

Table 3. Quasi-Experimental Post-Test-Only Crossover Design

Phase	Intact Class A	Intact Class B	Data collection
Trial 01	Experimental treatment (Video-Integrated 5E Model)	Control treatment (Traditional direct teaching)	Immediate MCQ post test
Trial 02	Control treatment (Traditional direct teaching)	Experimental treatment (Video-Integrated 5E)	Immediate MCQ post test

Model)

3.2. Population and Sample

The research was conducted at the Miza Educational Institute, widely recognized as the largest and most prestigious supplementary educational facility in the Greater Malé region. Known for its rigorous academic framework and high standards, the institute attracts students from various schools across Malé and Hulhumalé islands, an area supporting a broader regional student population of 39,605 including specific local cohorts of 3,009 Grade 7 and 2,912 Grade 8 students across the Greater Malé district, which encompasses 19 government-run national schools alongside private educational facilities (Ministry of Education, 2024).

Because of this regional reach, the purposive sampling of pre-existing, intact classes captured a wide, realistic diversity of baseline knowledge levels and socioeconomic backgrounds. A defining feature of this methodology was the implementation of a crossover design, which was specifically selected to mitigate the constraints of utilizing small intact classes at the participating institute (ranging from 8 to 16 students per subgroup). The intact class that served as the experimental group in the first trial transitioned to act as the control group in the second trial, and vice versa. By counterbalancing the groups, every participating student experienced both instructional methods, allowing them to act as their own controls. Given the high diversity in the students' educational and family backgrounds, this natural rotation effectively leveled the playing field, neutralizing potential differences in baseline aptitude without the need for formal pre-testing.

Furthermore, analyzing this crossover data via a Linear Mixed-Effects Model (LMM) allowed for the mathematical pooling of variance across both trials. After excluding seven incomplete profiles to ensure data integrity, the final analysis utilized a robust total of 115 valid experimental observations derived from 91 unique students. This pooled LMM approach substantially increases statistical power compared to isolated between-subjects analyses, providing sufficient sensitivity to detect the significant

developmental interaction effects reported.

3.3. Instruments for Data Collection

The data collection process for this quasi-experimental study relied on two primary categories of instructional and measurement instruments: the custom-designed multimedia video interventions and the post-lesson multiple-choice quizzes.

3.3.1 Multimedia Instructional Instruments

The experimental intervention utilized custom digital video content designed specifically to align with the Maldives National Syllabus for Grade 7 and 8 Science (National Institute of Education, 2015). To ensure high visual engagement while controlling stylistic consistency, the instructional videos were generated using Google Veo, an advanced artificial intelligence video generation model. The content was purposefully rendered in an anime-style visual aesthetic. This deliberate pedagogical choice is empirically supported by Barak, Ashkar, and Dori (2011), whose research demonstrated that teaching science via animated movies significantly enhances students' thinking skills specifically their science understanding, knowledge implementation, and reasoning ability. Furthermore, their study confirmed that students taught with animated media develop higher motivation to learn science, reporting increased self-efficacy, interest, enjoyment, and a stronger connection between the academic material and their daily lives.

This motivational and cognitive advantage is directly explained through the lens of Mayer's (2021) Cognitive Theory of Multimedia Learning (CTML). Because the anime-style videos leverage simultaneous visual-pictorial and auditory-verbal capabilities, they trigger active, dual-channel cognitive processing without overwhelming the learner. This active engagement successfully bridges the gap between complex thinking skills and sustained student motivation.

3.3.1.1. Generative AI Prompt Engineering Cognitive Load Calibration

A critical methodological challenge in utilizing generative AI for educational media is the inherent tendency of these models to produce overly complex,

visually dense outputs. Unregulated AI generation frequently introduces "seductive details" highly stimulating but academically irrelevant visual elements that monopolize a learner's working memory (Harp & Mayer, 1998). To prevent this catastrophic cognitive crash, the Google Veo prompt architecture was heavily engineered using strict instructional constraints.

The visual generation prompts were explicitly designed to enforce Mayer's (2021) Coherence Principle, which dictates that learning improves when extraneous words, pictures, and sounds are excluded. The prompt architecture utilized a dual-layered command structure:

1. Positive Constraints (What to Include): Prompts mandated a "flat-shaded anime aesthetic," "high-contrast primary colors for scientific elements," and "static, minimalist backgrounds." This ensured that the core scientific phenomena (e.g., an atomic structure or a physics equation) remained the undisputed visual focal point.

2. Negative Prompts (What to Exclude): To systematically weed out seductive details, negative prompts were heavily utilized. The AI was instructed to strictly avoid "dynamic camera movements," "crowded backgrounds," "hyper-realistic lighting," and "superfluous character animations." This rigorous weeding process is empirically validated by Sundararajan and Adesope (2020), whose meta-analysis confirmed that the inclusion of such seductive details severely impairs learners' ability to transfer foundational concepts into long-term memory.

However, a critical balance was required during this curation process. A rigorous distinction was maintained between extraneous 'seductive details' (Harp & Mayer, 1998; Sundararajan & Adesope, 2020) and biologically primary visual cues (Geary, 2008). While transient, highly stimulating background animations and irrelevant narrative elements were systematically eliminated using negative prompts to minimize extraneous cognitive load, essential visual anchors such as distinct biological structures, high-contrast character faces, and specific kinetic pathways were intentionally preserved. Because biologically primary stimuli automatically capture attention by bypassing the effortful executive functions of the prefrontal cortex, this deliberate curation ensured that the sanitization of seductive details did not inadvertently

wash away the evolutionary mechanisms required to organically anchor student attention. Building upon these primary biological anchors, precise secondary signaling cues were then engineered into the presentations during post-production.

Furthermore, precise signaling cues were engineered into multimedia presentations during post-production. These included on-screen text to anchor key terminology, visual highlighting (such as color-coding specific protons and electrons) to direct spatial attention, and vocal tone emphasis by the instructor to underline critical structural concepts. The pedagogical necessity of these specific cues is supported by Ibrahim et al. (2012), who demonstrated that implementing explicit visual and vocal signaling significantly reduces extraneous load and improves immediate retention, particularly for novice learners attempting to process complex scientific phenomena. (see Figure 7)

Finally, to prevent the depletion of students' working memory, all multimedia materials were strictly bound by the "Under-6 Rule." This parameter is grounded in the landmark empirical research by Guo, Kim, and Rubin (2014), who analyzed nearly seven million instructional video sessions and determined that student engagement drops precipitously after the six-minute mark, regardless of the total video length. By restricting any continuous video segment to a maximum duration of six minutes, the intervention ensured the content remained within the optimal attention span of the target demographic while effectively mitigating cognitive fatigue. To demonstrate the specific visual aesthetic, pacing, and signaling cues utilized in this study, a sample of the experimental multimedia intervention has been recorded.

3.3.1.2. Development of the Multimedia Intervention

To ensure replicability and maintain pedagogical rigor, the multimedia intervention was developed through a structured, researcher-mediated pipeline:

Scientific Content and Scripting: Core scientific concepts were drawn directly from the Maldives National Syllabus. Acting as both researcher and classroom instructor, the author drafted the

foundational instructional scripts. A large language model (Gemini) was then used iteratively to refine the pacing and ensure the vocabulary remained developmentally appropriate for early adolescents.

Visual Generation and Animation Pipeline: Foundational static images were generated using Nano Banana Pro. To prevent visual clutter, the prompts were specifically engineered to yield a flat-shaded anime aesthetic, embedding structural signaling cues directly into the initial text. These static frames were then processed through Google Veo, which animated them into discrete 8-second video segments while preserving the established pedagogical constraints.

Post-Production, Stitching, and Narration: The 8-second animated segments were imported into CapCut for final compositing. Here, the distinct clips were stitched into a cohesive sequence and synchronized with AI-generated voice narration. Additional explicit signaling cues, such as color-coded text overlays and directional arrows, were overlaid during this phase. Final video lengths were strictly capped at 90 seconds for engagement hooks and 4.5 minutes for instructional summaries.

Pedagogical Validation: Because generative AI remains susceptible to hallucinatory outputs, the tools were never allowed to operate autonomously. Prior to classroom deployment, the researcher conducted a rigorous, frame-by-frame audit of every video. This manual review ensured absolute scientific accuracy, verifying that all visual phenomena, voiceovers, and on-screen text aligned perfectly with national syllabus indicators and remained free of seductive details

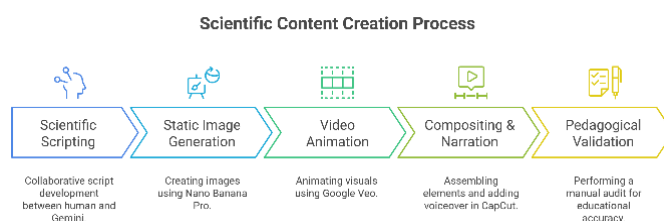


Figure 6. Linear progression of the AI-integrated multimedia production pipeline. The flowchart illustrates the sequential integration of human-mediated scripting, generative AI tools, and final pedagogical validation to ensure replicability and adherence to cognitive load constraints.

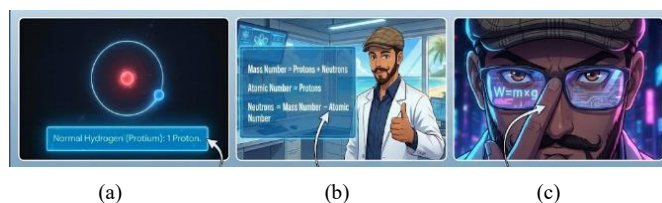


Figure 7. Implementation of Multimedia Signaling Cues and Anime-Style Aesthetic in Experimental Video Interventions. **(a)** Atomic Definition (Protium): On-screen text anchoring provides a direct, low-load definition, while distinct red and blue color-coding reduces extraneous search. **(b)** Formula Structuring: A semi-transparent text box groups related formulas with high-contrast typography, and character interaction directs focus to the general area of content. **(c)** Embedded Attention: The formula ($W = m \times g$) is embedded creatively on the lens to link seeing with understanding, utilizing a high-focus composition to draw immediate visual attention. (SciSensei, n.d.)



Figure 8. The images demonstrate the practical application of the AI-generated experimental intervention at Miza Educational Institute. Photographs were deliberately framed from the rear of the classroom to maintain strict ethical compliance and ensure the anonymity of the minor participants.

3.3.2. Measurement Instruments (Retrieval Quizzes)

To measure immediate post-lesson performance and fulfill the "Evaluate" phase of the adapted 5E model, post-lesson quizzes were administered instantly following the instructional phase for both the experimental and control groups. The quizzes consisted entirely of comprehensive Multiple-Choice

Questions (MCQs) designed to cover the exact topics taught during the session. To ensure absolute measurement equivalence, the exact same multiple-choice quiz was administered to both the experimental and control cohorts for each respective science topic.

The total number of questions on each quiz was not fixed; rather, it was dynamically adjusted to ensure comprehensive assessment of the specific lesson content. Each item was scored objectively (1 point for a correct answer, 0 points for an incorrect answer). Because the total number of items varied depending on the conceptual density of the topic, all raw scores were systematically converted into percentages. This conversion ensured a standardized, reliable quantitative comparison across all experimental and control crossover trials.

3.3.3. Validity and Reliability of Instruments

Content validity for all measurement instruments was established through strict, direct alignment with the official Maldives National Curriculum Framework (National Institute of Education, 2015). Every MCQ was explicitly mapped to specific curricular indicators, ensuring the questions directly measured the scientific content delivered via both the multimedia interventions and the direct teacher instruction. To regulate assessment difficulty and ensure a comprehensive evaluation of student understanding, the items were systematically constructed utilizing the revised Bloom's Taxonomy (Anderson & Krathwohl, 2001), balancing foundational recall with higher-order conceptual application.

Reliability was secured through the standardized design and objective dichotomous scoring of the multiple-choice format. Furthermore, because the identical, syllabus-aligned quiz instrument was administered to both the experimental group and the control group under identical temporal conditions (immediately post-instruction), environmental testing inconsistencies were neutralized. This robust crossover implementation allowed the variations in the final percentage scores to be confidently attributed to the instructional delivery method rather than inconsistencies in the measurement tool itself.

3.4. Procedure / Data Analysis Plan

3.4.1. Experimental Procedure

The pedagogical intervention was administered during standard, scheduled science periods at the Miza Educational Institute. To replicate realistic school conditions and ensure the study's ecological validity, each instructional session was strictly time-bound to 45 minutes, directly aligning with the standard timetabled class duration for these grades at the Miza Educational Institute. The execution of the video-integrated 5E instructional model (Bybee et al., 2006) required rigorous temporal management to ensure cognitive resources were optimally utilized rather than exhausted.

For the experimental group, the 45-minute lesson was systematically divided into four distinct phases, strategically mapped to the cognitive fluctuations of the modern adolescent learner (see Figure 9):

Phase 1: The Engagement Hook (Minutes 0:00 – 1:30) The lesson commenced immediately with a short, AI-generated anime-style video hook. During the first ninety seconds of a class, students transitioning from other environments frequently experience high levels of extraneous cognitive load and distracted thinking. This rapid visual stimulus was designed to actively disrupt that cognitive fatigue. By leveraging the visually stimulating anime aesthetic without introducing heavy academic content, the hook instantly oriented the students toward the core scientific phenomena of the day, successfully fulfilling the "Engage" phase of the 5E model (Bybee et al., 2006).

Phase 2: Direct Teacher Instruction (Minutes 1:30 – 16:30) Immediately following the hook, the researcher transitioned into the "Explain" phase using streamlined, traditional direct instruction. Because the students' attention had been successfully captured by the video, their working memory was primed for dual-channel processing. (Mayer, 2021) This 15-minute window allowed for the verbal delivery of complex abstract concepts, detailed formula breakdowns, and live student-teacher interaction. During this phase, all extraneous multimedia was turned off to eliminate split-attention effects (Sweller et al., 2019). The instructor relied on localized whiteboard signaling and direct questioning to guide schema construction, ensuring the intrinsic load of the scientific material was managed efficiently.

Phase 3: Multimedia Summary (Minutes 16:30 – 21:00) Before moving to the assessment, a final animated summary video was displayed. Remaining well under the six-minute cognitive threshold established by Guo et al. (2014), this 4.5-minute phase served to solidify the newly constructed schemas. The summary video utilized the same anime characters introduced in the hook, creating a cohesive narrative structure. This phase visually mapped the abstract concepts discussed during direct instruction, allowing students to integrate the auditory-verbal lessons with visual-pictorial representations (Mayer, 2021) before their cognitive endurance began to wane.

Phase 4: Immediate Retrieval Practice (Minutes 21:00 – 45:00) The remaining 24 minutes of the class were dedicated exclusively to the "Evaluate" phase. Students were administered in the multiple-choice quiz and required to complete it under standard, silent examination conditions. This extended period served a dual pedagogical purpose. First, it provided the quantitative data necessary for this study's immediate retrieval metrics. Second, it leveraged the "testing effect" (Roediger & Karpicke, 2006). By forcing students to actively retrieve the newly acquired schemas immediately after the instructional phases, this practice naturally reduced mind-wandering and tangibly solidified the neural pathways required for long-term memory consolidation. (Agarwal et al., 2021; Szpunar et al., 2013)

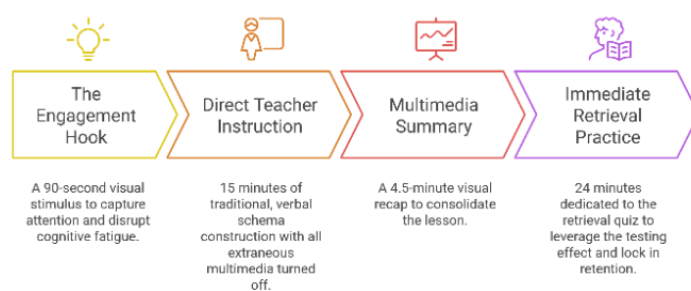


Figure 9. Pedagogical timeline and structural breakdown of the 45-minute video-integrated experimental lesson.

For the control group, the 45-minute lesson was structurally engineered to isolate the timing of the multimedia integration while maintaining absolute parity in overall content exposure and instructional time. These students received the exact same 15 minutes of direct teacher instruction, utilizing identical scripts and whiteboard signaling to prevent any bias in teacher attention or pacing. However, rather than

viewing the AI multimedia before the assessment, the control group transitioned immediately into the retrieval practice phase. To perfectly balance the 45-minute period and ensure educational equity, the control group was shown the engagement hook and the multimedia summary after all quizzes had been collected. This critical methodological design ensured that both cohorts experienced identical teacher pacing and equal exposure to the novelty of the digital medium within the same class period. Consequently, the sequencing of the multimedia prior to the assessment was successfully isolated as the sole independent variable impacting the immediate retrieval scores.

3.4.2. Cross-over implementation

To neutralize the inherent limitations of using non-equivalent, intact classes (such as varying baseline intelligence or socioeconomic factors), a crossover design was employed. Trial 1 was conducted during the first week of the study. A one-week (7-day) interval was implemented before conducting Trial 2. This natural gap was not an arbitrary design choice, but rather a strict structural requirement of the institute's academic timetable, as the participating classes are allocated a single science period per week.

To prevent content carryover effects between the two phases, Trial 1 and Trial 2 focused on completely independent, non-sequential science topics drawn from the Maldives National Syllabus. This timetable-driven interval provided a significant methodological advantage by naturally mitigating immediate testing fatigue and resetting instructional novelty. During the second week, the intact class that served as the experimental group in Trial 1 crossed over to act as the control group, while the former control group received the experimental multimedia intervention. This ensured all participating students eventually benefited from the multimedia-integrated method while allowing the subsequent Linear Mixed-Effects Model (LMM) to cleanly isolate period and topic effects.

3.4.3. Data Analysis Plan

Upon the completion of both trials, the quantitative data derived from the immediate post-lesson MCQ quizzes were tabulated and cleaned. The analytical

procedure involved two distinct stages:

1. **Descriptive Statistics:** Initial analyses calculated the mean scores, standard deviations, and standard errors for both the experimental and control groups across the Grade 7 and Grade 8 cohorts to provide a macro-level overview of immediate post-lesson performance.
2. **Inferential Statistics:** To rigorously evaluate the crossover structure and isolate period effects, the data were analyzed using Linear Mixed-Effects Models (LMM) in R (utilizing the `lme4` and `lmerTest` packages). Within the model, "Instructional Method" and "Trial" were designated as fixed effects. To account for baseline ability variations and track repeated measures, "Student_ID" a unique numerical identifier assigned to each participant to strictly preserve the anonymity of the students—was utilized as a random intercept. A significance level of $\alpha=0.05$ was established to determine the statistical significance of the instructional method's impact on student performance.

4. Results and Discussion

4.1. Grade 7 Cohort Analysis

To evaluate the immediate academic retention of Grade 7 students, test scores were analyzed collectively across both crossover trials. The descriptive statistics comparing the AI-generated multimedia intervention to traditional instruction are presented below (see Table 4.).

Table 4. Grade 7 Descriptive Statistics by Trial

Method	Trial	N	Mean	SD	SE
AI Video - integrated instructions	1	12	56.25	15.24	4.40
Traditional instructions	1	8	45.62	20.08	7.10
AI Video - integrated instructions	2	12	70.83	14.12	4.07
Traditional instructions	2	10	50.00	21.86	6.91

A linear mixed-effects model (LMM) was utilized to assess these differences while controlling for repeated

measures and period effects. The model revealed a significant main effect of the instructional method (see Table. 5).

Table 5. Linear Mixed-Effects Model Predicting Grade 7 Test Scores

Predictors	Estimate s	Std. Erro r	CI	t	p	df
(Intercept)	59.41	4.40	50.49 – 68.33	13.50	<0.001	37.00
Method [Traditional]	-17.06	5.13	-27.45 – -6.67	-3.33	0.002	37.00
Trial [2]	9.79	4.88	-0.09 – 19.67	2.01	0.052	37.00
Random Effects						
σ^2	206.42					
τ_{00} Student_ID	109.47					
ICC	0.35					
N Student_ID	31					
Observations	42					
Marginal R ²	0.227 /					
Conditional R ²	0.495					

Students scored significantly lower under traditional instruction (Estimate = -17.06, 95% CI [-27.45, -6.67], p = 0.002) when compared to the AI Video baseline. The accompanying boxplot visually reinforces this dynamic, highlighting a clear performance advantage for the multimedia intervention within the younger cohort.

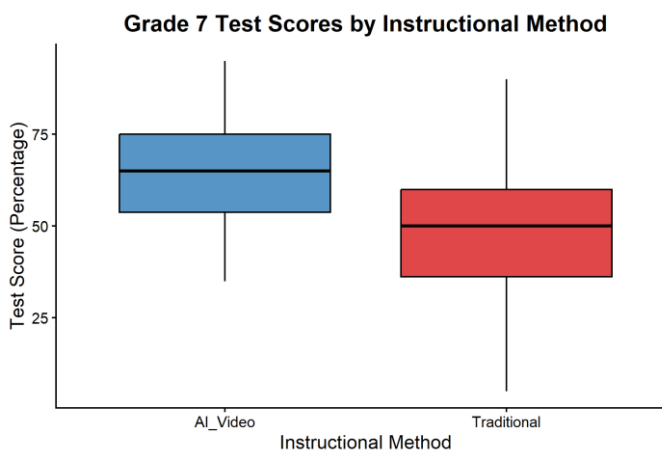


Figure 10. Boxplot illustrating the distribution of Grade 7 test scores by instructional method. The visualization compares the median performance, interquartile range, and

score variance between students who received the AI-generated multimedia intervention (blue) and those taught via traditional direct instruction (red). Data-Based Finding: This figure strictly presents empirical data derived directly from the measured post-lesson retrieval quiz scores.

4.2. Grade 8 Cohort Analysis

An identical analytical framework was applied to the Grade 8 cohort. The mean scores and standard errors across both instructional methods and trials are detailed in Table 6.

The LMM analysis for Grade 8 demonstrated a stark reversal in student performance (see Table. 7). The model confirmed that students achieved significantly higher scores when taught using traditional direct instruction (Estimate = 17.01, 95% CI [8.67, 25.34], p < 0.001) rather than the multimedia baseline. This upward shift is captured in the boxplot below (Figure. 11), confirming that the older students benefited substantially from a traditional pedagogical approach.

Table 6. Grade 8 Descriptive Statistics by Trial

Method	Trial	N	Mean	SD	SE
AI Video - integrated instructions	1	27	41.48	15.62	3.01
Traditional instructions	1	15	55.33	17.27	4.46
AI Video - integrated instructions	2	17	51.18	19.33	4.69
Traditional instructions	2	14	72.14	18.47	4.94

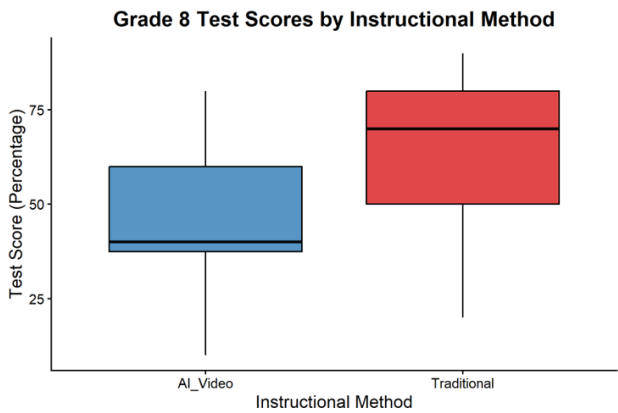


Figure 11. Boxplot illustrating the distribution of Grade 8 test scores by instructional method. The visualization compares the median performance, interquartile range, and score variance between students who received the AI-generated multimedia intervention (blue) and those taught

via traditional direct instruction (red). Data-Based Finding: This figure strictly presents empirical data derived directly from the measured post-lesson retrieval quiz scores.

To synthesize these contrasting findings, the following bar chart (Figure.12) provides a comprehensive visualization of both cohorts across all trials. This side-by-side comparison clearly illustrates the developmental divergence: AI multimedia scaffolding elevated Grade 7 outcomes, while traditional direct instruction proved superior for Grade 8.

Table 7. Linear Mixed-Effects Model Predicting Grade 8 Test Scores

Predictors	Estimate s	Std. Erro r	CI	t	p	df
(Intercept)	40.36	3.07	34.23 – 46.48	13.15	<0.001	68.00
Method [Traditional]	17.01	4.18	8.67 – 25.34	4.07	<0.001	68.00
Trial [2]	12.61	4.13	4.36 – 20.86	3.05	0.003	68.00
Random Effects						
σ ²	302.04					
τ ₀₀ Student_ID	0.00					
N Student_ID	60					
Observations	73					
Marginal R ² / Conditional R ²	0.284 / NA					

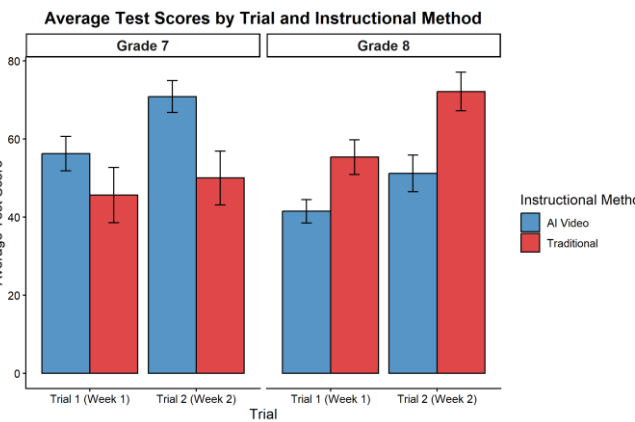


Figure 12. Comparison of mean test scores by instructional method and trial across Grade 7 and Grade 8 cohorts. The grouped bar chart visualizes the mean immediate retrieval quiz scores for the AI-generated multimedia intervention (blue) and traditional direct

instruction (red) across the two-week crossover design. Error bars denote the standard error of the mean. The side-by-side panels synthesize the developmental interaction effect, illustrating the multimedia advantage for Grade 7 versus the traditional instruction advantage for Grade 8 across both trials. Data-Based Finding: This visualization represents strictly empirical findings derived from quantitative quiz results.

4.3. General Discussion and Findings

The empirical findings of this study reveal a complex, load-dependent dynamic regarding the integration of AI-generated, anime-style multimedia instruction in secondary science classrooms. Across the four experimental and crossover trials, the data rejected a uniform response to video-integrated instruction. Instead, it demonstrated a sharp developmental divergence between the Grade 7 and Grade 8 cohorts.

For the Grade 7 cohort, the linear mixed-effects model (LMM) confirmed that the multimedia intervention provided a significant educational advantage. Students scored significantly lower under traditional instruction (p = 0.002) compared to the AI Video baseline. This indicates that younger adolescent learners benefit directly from the visual-pictorial and auditory-verbal channels working in tandem. By utilizing the character-driven narrative and anime aesthetic, the multimedia served as an effective cognitive anchor for foundational science schemas.

Conversely, the LMM analysis for the Grade 8 cohort yielded highly significant results (p < 0.001) in the opposite direction. Traditional direct instruction vastly outperformed the multimedia baseline. This unexpected outcome challenges the generalized assumption that modern digital natives universally thrive under high-stimulus multimedia conditions. For older Grade 8 students tackling structurally dense curriculum requirements, we theorize that the anime-style visual presentation introduced an unintended cognitive tax despite the rigorous adherence to the "Under-6 Rule" and the systematic elimination of what were originally perceived to be seductive details. Rather than acting as a cognitive bridge, the visually dense media likely competed with the core instructional content for limited working memory resources. As a result, traditional direct instruction proved to be a much more efficient delivery mechanism for immediate retrieval in high-complexity environments.

While mean scores indicate overall instructional efficacy, the standard deviation (SD) reveals important dynamics regarding classroom equity. For the Grade 7 cohort, the AI multimedia intervention consistently compressed the variance in student scores. The AI Video group maintained a tighter SD of 15.24 in Trial 1, which narrowed further to 14.12 in Trial 2. In contrast, the traditional instruction groups exhibited much wider score spreads, recording SDs of 20.08 and 21.86. This confirms that AI-generated media actively compresses variance for younger students, functioning as an effective pedagogical equalizer when the intrinsic cognitive load is manageable.

Conversely, for the Grade 8 cohort, the fragmentation of test scores remained relatively consistent across all treatments. The standard deviations for the AI multimedia groups (15.62 and 19.33) closely mirrored those of the traditional instruction groups (17.27 and 18.47). This indicates that under the high intrinsic load of the Grade 8 curriculum, the variance in student performance is driven primarily by the inherent difficulty of the science topics rather than the instructional method itself. Because individual working memory capacity naturally varies among adolescents, highly complex subjects inevitably produce a wider spread of scores.

However, while the fragmentation remained consistent across both treatments, the traditional direct instruction successfully shifted the entire Grade 8 cohort's performance upward. This suggests that while traditional teaching cannot entirely eliminate the natural achievement gap associated with high cognitive load, it serves as a highly reliable delivery mechanism that maximizes overall schema acquisition without exacerbating classroom variance.

4.4. Theoretical and Pedagogical Implications

These contrasting outcomes offer a valuable contribution to the ongoing discourse surrounding Mayer's (2021) Cognitive Theory of Multimedia Learning (CTML). While CTML generally warns against extraneous visual elements, the present findings highlight a critical boundary condition: the learner's baseline academic load.

The divergent results between the cohorts can be explained through the interaction between the seductive detail effect and intrinsic cognitive load.

Research indicates that the detrimental impact of seductive details is heavily dependent on the baseline difficulty of the instructional task; while seductive details impair learning in high cognitive load conditions, they can actually improve motivation and performance when the intrinsic cognitive load is low (Park et al., 2011; Park et al., 2015). Under a low cognitive load condition, such as listening to narration, seductive details do not interfere with learning and can lead to a compensatory, motivating effect mediated by situational interest.

For the Grade 7 cohort, the inherent complexity of the early secondary science curriculum (National Institute of Education, 2015) generated a manageable intrinsic cognitive load. Consequently, students possessed sufficient working memory capacity to process the anime-style visuals. In this low-load environment, the dynamic media operated not as a seductive distractor, but as an effective motivational anchor that enhanced immediate schema acquisition.

However, as academic rigor escalated in the Grade 8 syllabus (National Institute of Education, 2015) introducing abstract scientific knowledge the intrinsic cognitive load naturally spiked. In this high-load condition, the students' working memory was already operating near maximum capacity. The data strongly suggests that the visually rich, anime-style multimedia pushed the learners toward cognitive overload. While cognitive load was not directly measured physiologically, we hypothesize that this induced a phenomenon similar to the seductive detail effect, actively disrupting the formation of coherent mental models. For these older cohorts, the cognitive architecture was better optimized for streamlined, text-and-speech-dominant direct instruction where extraneous visual elements were minimized to preserve essential processing capacity.

However, this necessary minimization introduces a critical boundary condition for instructional designers: navigating the pedagogical tension between eliminating seductive details and preserving primary biological cues. Stripping a multimedia presentation of all dynamic visual elements risks neutralizing the Signaling Principle, leaving learners without the necessary visual anchors to process complex scientific phenomena. The efficacy of AI-integrated media relies on a precise calibration filtering out decorative visual noise while meticulously retaining the evolutionary

and structural cues that naturally tether the learner's working memory to the core learning objective

4.4.1. The Element Interactivity Threshold

To fully understand the divergent results between the two cohorts, the intrinsic difficulty of the respective syllabi must be analyzed through the lens of Element Interactivity (Sweller, 2010). Element interactivity refers to the extent to which the components of a learning task interact with one another. When elements do not interact, they can be learned sequentially without heavily burdening working memory. For the Grade 7 cohort, foundational science topics often present low element interactivity. Concepts such as basic biological definitions or individual atomic components can be processed in isolation. Consequently, the students' working memory capacity did not appear to be overwhelmed, allowing the anime-style multimedia to function as an effective, engaging schema-builder.

Conversely, the Grade 8 curriculum introduces highly interactive elements, in these high-element interactivity tasks, students must simultaneously hold multiple, interacting variables in their working memory to understand the underlying phenomenon. Because the intrinsic cognitive load was already operating at maximum capacity, it is highly probable that the introduction of visually rich multimedia pushed the total cognitive demand beyond the biological limits of the students' developing executive functions.

4.4.2. The Transient Information Effect

This cognitive overload in the older cohort was further exacerbated by the inherent nature of digital video, a phenomenon defined in educational psychology as the Transient Information Effect (Wong et al., 2012). Unlike static text or physical whiteboard diagrams, video presentations provide information that is fleeting. As the anime-style hook and summary videos played, Grade 8 students were forced to maintain the visual and auditory information from previous seconds in their working memory while actively attempting to process the new, incoming information appearing on the screen. While transient information is manageable during low-complexity tasks as evidenced by the Grade 7 results it becomes severely detrimental when combined with the high element interactivity of

advanced middle school science concepts.

4.4.3. Working Memory Saturation

The intersection of high element interactivity, transient multimedia information, and the already fragmented attention spans of modern adolescents creates a catastrophic cognitive collision. For the older cohort, the AI-generated visual aesthetics ceased to be a pedagogical scaffold and instead mutated into seductive details. We hypothesize that the adolescent brain, struggling to process interacting science facts while simultaneously attempting to retain the transient flow of the video narrative, simply ran out of processing capacity. As a result, the students in the experimental group failed to construct coherent mental schemas, leading to significantly lower immediate retrieval scores compared to their peers who received streamlined, static direct instruction. This load-dependent pedagogical divergence where multimedia shifts from a motivational anchor in low-complexity environments to an obstructive cognitive barrier in high-complexity environments is visually synthesized in the conceptual matrix below (see Figure 13).

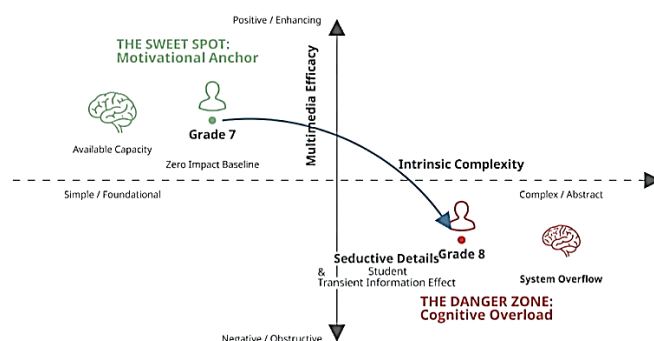


Figure 13. Theoretical model of load-dependent multimedia efficacy. This conceptual diagram synthesizes the study's LMM findings within the framework of Cognitive Load Theory. For Grade 7 learners, where intrinsic complexity is foundational, AI-generated multimedia appears to act as an effective motivational anchor that enhances overall performance. Conversely, as intrinsic complexity scales upward for the Grade 8 curriculum, the empirical score drop suggests that working memory is hypothesized to reach system overflow. In this high-load environment, the transient information effect and visually seductive details likely introduce an unintended cognitive tax, pushing the multimedia intervention into the negative efficacy danger zone. Theoretical Interpretation: Unlike the empirical charts above, this matrix does not plot raw data points. It is a

conceptual interpretation that synthesizes the study's empirical findings into a broader theoretical model of cognitive load.

4.5. Limitations and Future Research Directions

Several methodological limitations must be acknowledged when interpreting these findings. First, the study utilized a quasi-experimental design with non-randomized, intact classes, meaning true random assignment of individual students to treatment conditions was not possible. Second, the reliance on single-site sampling restricted to the practical classroom parameters at the Miza Educational Institute resulted in relatively small sample sizes within individual grade cohorts. While the crossover design successfully controlled for baseline class ability, these factors may limit the broader generalizability of the findings, and larger, multi-site randomized controlled trials are required in future research. Third, the study evaluated immediate academic retention via post-lesson multiple-choice quizzes. This design measures short-term schema acquisition but does not assess long-term memory consolidation. Future inquiries should incorporate delayed post-tests to determine whether anime-style multimedia creates enduring longitudinal recall advantages despite initial retrieval friction.

Furthermore, while the study rigorously controlled overall instructional time and instructional novelty by exposing the control group to the multimedia intervention after the assessment, minor confounding variables in the immediate pre-test cognitive state must be acknowledged. Transitioning students into a quiz immediately following traditional direct instruction, versus transitioning them after a highly stimulating AI video summary, inherently alters their immediate sensory arousal levels. While this difference in presentation mode is the core focus of the study, future physiological research (such as measuring heart rate or pupillometry) could help determine exactly how much of the score variance is driven by cognitive schema acquisition versus mere sensory stimulation prior to testing.

Additionally, the study's design introduces inherent repeated-measures statistical concerns and possible period and topic effects. An observable macro-trend across the dataset is the universal increase in mean scores during the crossover phase (Trial 2). Initially, this global improvement suggested a powerful

instructional acclimation effect (Miguel-Alonso et al., 2023). According to Cognitive Load Theory, students' working memory capacity is inherently restricted when processing "novel information" which includes adapting to a new pedagogical routine and strict quiz pacing. In theory, by the second trial, the instructional procedure itself became familiar, naturally reducing extraneous load and freeing cognitive capacity for deeper schema consolidation. However, our linear mixed-effects model (LMM) analysis indicates that this variance was heavily influenced by fluctuations in the intrinsic difficulty of the specific weekly science topics (Sweller, 2010), rather than pure acclimation. By isolating the 'Trial' effect, the model confirmed that the Week 2 topic provided a statistically significant 12.61-point artificial boost for the Grade 8 cohort ($p = 0.003$). A similar trend appeared in the Grade 7 cohort, which experienced a 9.79-point boost during Week 2, though this effect was only marginally significant ($p = 0.052$).

While the LMM successfully neutralized these period effects to accurately evaluate the two teaching methods, definitively disentangling topic bias from true cognitive acclimation is difficult given that the current study was limited to only two trials. This presents a strong opportunity for future research. By conducting extended longitudinal studies utilizing more trials across a wider developmental gradient, researchers could accurately isolate and measure the correlation between method familiarity and academic performance. Crucially, mapping these varied age groups against the escalating intrinsic cognitive load of the science syllabus would allow educators to pinpoint the exact biological threshold where multimedia transitions from an effective scaffold to an extraneous burden.

Furthermore, the detrimental impact of the transient information effect observed within the Grade 8 cohort necessitates targeted future research into structural multimedia solutions. While this study utilized strict system-paced video segments to maintain temporal consistency across the experimental trials, future investigations should evaluate the efficacy of learner-paced digital environments. Research must explore whether providing students with interactive cognitive scaffolding such as the ability to pause, rewind, or manually dictate the pacing of AI-generated animations can effectively neutralize the transient information

effect. Determining whether self-paced controls can prevent working memory saturation during high-element interactivity lessons will provide critical pedagogical guidance for integrating generative AI into advanced secondary science curricula.

Finally, while this study utilized immediate retrieval scores as a quantitative proxy for cognitive overload, the internal cognitive mechanism specifically the exact moment working memory becomes saturated-remains invisible. Future research should integrate continuous physiological measurements, such as eye-tracking technology and pupillometry, during the multimedia instructional phases. Eye-tracking would allow researchers to empirically validate the seductive detail effect in real-time by mapping students' gaze fixations and heat maps. For instance, measuring whether Grade 8 students are disproportionately fixating on the anime characters' aesthetic features rather than the embedded physics formulas would provide concrete biomechanical evidence of split-attention and extraneous cognitive load. Furthermore, analyzing pupil dilation variations between the low-interactivity (Grade 7) and high-interactivity (Grade 8) cohorts would offer a direct, objective measurement of intrinsic cognitive strain. Implementing these neuro-pedagogical tools would elevate the evaluation of the video-integrated 5E model from behavioral inference to precise, real-time neurological observation.

Ultimately, while investigations into learner-paced media controls and delayed post-tests remain valuable, the immediate priority for advancing this research must be twofold. First, implementing larger, multi-school randomized trials is essential to definitively establish the generalizability of these load-dependent findings across broader educational demographics. Second, future experimental designs must prioritize the integration of validated cognitive-load measures pairing established subjective psychometric instruments (such as the Paas Cognitive Load Scale) with objective physiological metrics to directly quantify the exact threshold where digital scaffolding mutates into cognitive overload.

4.6. Threats to Internal Validity and Alternative Explanations

While the LMM analysis indicates a load-dependent developmental divergence, several alternative

explanations and threats to internal validity must be addressed. First, to mitigate teacher effects and instructor bias, the exact same researcher delivered the 15-minute direct instruction to both the experimental and control groups using identical, standardized scripts and whiteboard signaling. Second, concerns regarding class composition and prior achievement were neutralized by the crossover design; rather than relying on assumed equivalence between intact classes, students acted as their own controls, and baseline ability was mathematically controlled in the LMM by designating Student_ID as a random intercept. Third, to account for topic and test difficulty, both cohorts were administered the exact same syllabus-aligned quiz immediately post-instruction. While the Week 2 topic proved inherently easier creating a universal score increase the LMM successfully isolated this period effect, ensuring the comparison between teaching methods remained valid. Fourth, to prevent order effects and carryover, a strict 7-day washout period was enforced, and the trials focused on completely non-sequential syllabus topics. Finally, to control for the novelty effect where students might perform better simply due to the excitement of a new digital medium the control group was intentionally shown the AI-generated multimedia immediately after completing their quizzes. This ensured both groups experienced identical sensory stimulation and digital novelty within the 45-minute period, isolating the timing of the multimedia as the sole variable impacting retrieval scores.

5. Conclusion

5.1. Synthesis of Empirical Findings

The contemporary science classroom is increasingly shaped by the shifting cognitive habits of Generation Z and Alpha learners. Ubiquitous smartphones use and the normalization of short-form video consumption have fundamentally altered baseline attention spans, often leaving students with a compromised working memory capacity before a lesson even begins (Firth et al., 2019; Mona et al., 2026). This study aimed to confront this reality directly by adapting the traditional 5E Instructional Model (Bybee et al., 2006), testing whether highly structured, AI-generated anime-style multimedia could capture fractured attention without inducing cognitive overload.

The data gathered from the crossover trials at the Miza Educational Institute present a nuanced picture that challenges the blanket assumption that "digital natives" inherently learn better through screens. Instead of a universal benefit, we observed a profound divergence in efficacy. Rather than a purely developmental interaction, this divergence appears to be heavily confounded and tied directly to the escalating intrinsic cognitive load of the subject matter between the grades. (Sweller, 2010) For the Grade 7 cohort, where foundational science concepts demand a relatively manageable cognitive load, the multimedia integration worked exactly as intended by Mayer's (2021) Cognitive Theory of Multimedia Learning. The dual-channel processing of the anime-style visuals and auditory narrative acted as a highly effective motivational anchor. It provided just enough stimulation to sustain engagement, yielding moderate-to-large practical gains in immediate knowledge retrieval when compared to traditional chalk-and-talk teaching. In an applied educational context, the estimated 17.06-point performance shift observed in the LMM translates to nearly a full letter-grade improvement on a standard academic assessment. This demonstrates that for low-interactivity subjects, brief digital scaffolding provides a highly meaningful boost to baseline schema acquisition within a standard 45-minute class period.

However, the Grade 8 results serve as a critical boundary condition for multimedia integration. Because their curriculum introduces many abstract concepts which demand higher cognitive load, the intrinsic difficulty of the material was already pushing the limits of the students' working memory. In this high-load environment, the visually rich anime media ceased to be a helpful instructional scaffold. Instead, the observed performance drop may be explained by the seductive detail effect (Park et al., 2015; Sundararajan & Adesope, 2020). (Park et al., 2015; Sundararajan & Adesope, 2020). The aesthetic elements of the AI-generated video aggressively competed for scarce cognitive resources, overwhelming the learners and disrupting their ability to form accurate scientific schemas. For these older students, stripped-back traditional direct instruction which focuses cognitive energy entirely on the core concepts proved significantly more

effective, preventing a severe 17.01-point academic penalty that could mean the difference between passing and failing a conceptually dense syllabus topic.

5.2. Pedagogical and Managerial Implications for Instructional Design

For classroom educators, instructional designers, and school administrators, these findings highlight a pressing need for pedagogical calibration. The decision to deploy generative AI tools or video media in the classroom should never be based simply on a desire to modernize a lesson or entertain students; it must be dictated by a careful analysis of the intrinsic difficulty of the material being taught.

When designing lessons around conceptually accessible topics, educators can confidently deploy stimulating, character-driven video hooks to break through cognitive resistance and set a positive tone for the lesson. But when approaching high-stakes, structurally complex scientific phenomena, the managerial imperative flips: educators must ruthlessly eliminate extraneous visual stimuli. In these high-load scenarios, traditional text-and-speech instruction, supported by clear, static signaling cues like vocal intonation or color-coded whiteboards (van Gog, 2021), is the most responsible way to protect a learner's fragile working memory.

This study also reinforces the practical necessity of strict temporal boundaries, specifically the "Under-6 Rule" (Guo et al., 2014). No matter how visually impressive an AI-generated video might be, sustained digital exposure rapidly yields diminishing returns in student focus. By restricting video hooks to a single minute and capping summary videos at three to five minutes and intentionally placing them strictly at the margins of a 45-minute lesson, teachers can harness the motivational pull of digital media without exhausting their students. Pairing this sequence with immediate multiple-choice retrieval practice (Agarwal et al., 2021) ensures that the "Evaluate" phase does more than just measure learning; it actively forces schema consolidation before the students leave the room.

Furthermore, while our LMM analysis indicated that the universal score improvements observed during Trial 2 were heavily influenced by topic difficulty, the

crossover structure of this study underscores a critical, yet often overlooked, pedagogical principle: the cognitive cost of instructional instability. Modern educators are frequently encouraged to constantly vary their teaching methods and introduce new digital platforms to maintain student interest. However, doing so perpetually triggers the novelty effect, acting as a continuous source of extraneous cognitive load (Miguel-Alonso et al., 2023). Every time a teacher introduces a radically new pedagogical routine, students must expend vital working memory simply figuring out the mechanics of the lesson and processing the routine as "novel information" rather than focusing on the intrinsic science content (Sweller et al., 2011). Therefore, educators should strive for structural predictability. By maintaining a highly consistent pedagogical framework such as a standardized sequence of a video hook, direct instruction, and retrieval practice where teachers can automate the process of learning, safely aiming to preserve their students' fragile cognitive capacities for the heavy lifting of scientific inquiry.

5.3. Policy Implications for Educational Authorities

On a systemic level, these conclusions challenge the prevailing narrative driving many national and international technology integration policies. Currently, educational authorities frequently equate the sheer volume of classroom digitization with pedagogical progress. Yet, our empirical evidence suggests that uncalibrated technology integration can actively impair learning in complex subjects.

Funding and policy directives need to shift away from the mere accumulation of hardware and screen time toward cognitive-load-optimized instructional design. As generative AI tools like Google Veo become increasingly accessible to localized school districts, curriculum developers require specialized training to identify and eliminate seductive details from official learning materials. Educational media must be vetted not for its entertainment value or production quality, but for its strict adherence to cognitive psychology principles, ensuring that visual segmenting, signaling, and coherence are prioritized.

This paradigm shift must also extend deeply into

teacher training programs. Today's educators are navigating a classroom environment shaped by the rapid digital consumption patterns of modern students. Consequently, professional development must move beyond basic Technological Pedagogical Content Knowledge (TPACK) (Mishra & Koehler, 2006) to place a heavy emphasis on Cognitive Load Theory (Sweller et al., 2019) and the neurological impacts of modern digital media consumption habits. Teachers need to be equipped not just with the technical skills to generate engaging media, but with the psychological insight to recognize when a student's working memory is saturated, ensuring they know exactly when it is pedagogically necessary to turn the screens off.

Within the localized context of the Maldivian educational framework, and for similar regional institutional settings, these findings suggest that curriculum developers should exercise caution when integrating digital supplementary materials. While contemporary educational goals increasingly advocate digital literacy, the push for multimedia integration must be balanced with a practical understanding of adolescent cognitive architecture. Institutional policymakers and local curriculum developers are encouraged to evaluate digital supplementary materials through the lens of cognitive load before widespread classroom deployment. By considering established multimedia principles—such as segmenting and coherence when selecting educational media, local authorities can better ensure that artificial intelligence serves as a pedagogical scaffold rather than an unintended cognitive barrier, particularly for students who may be susceptible to modern attentional fatigue.

5.4. Conclusion

Fulfilling the ambitious goals of modern science curricula which demand analytical inquiry, critical thinking, and abstract problem-solving ultimately requires a deep respect for the biological limits of human cognition. The integration of Artificial Intelligence and advanced multimedia into the classroom is not a panacea for the educational challenges posed by the digital age; rather, it is a highly volatile catalyst that must be wielded with precision. This study demonstrates that the success of AI-generated instructional media is not determined by its visual fidelity or entertainment value, but by its

strict alignment with the baseline academic load of the learner. When applied to foundational, low-interactivity concepts, targeted multimedia can successfully break through the apathy often associated with modern digital media habits, acting as a powerful motivational anchor. However, when deployed amidst the high intrinsic cognitive load of complex abstract science, the observed decline in immediate retrieval scores indicates that the very same media may overwhelm working memory capacity. In these high-load environments, we hypothesize that the visual elements function as seductive details that obstruct schema acquisition. Ultimately, the future of science education does not lie in competing with the rapid-fire entertainment of the internet, nor does it require a wholesale retreat to archaic didactic methods. Instead, it demands a disciplined, evidence-based pedagogy one that meticulously manages students' finite working memory to foster enduring, meaningful scientific literacy.

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Psychological Impacts of Sexual Violence in the Context of Domestic Violence: A Qualitative Study in Negombo Divisional Secretariat Division, Sri Lanka

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Abstract: Sexual violence within domestic and intimate-partner relationships is an underreported concern in Sri Lanka, with important psychological and social consequences. This qualitative study explored the reported psychological experiences, coping responses, and support needs of adult female survivors of sexual violence in the context of domestic violence in the Negombo Divisional Secretariat Division in 2024. Researchers purposively selected ten participants from survivors referred to the Mithuru Piyasa Centre at Negombo District General Hospital. Data were collected through semi-structured, in-depth interviews using a researcher-developed interview guide and analysed thematically using Braun and Clarke's six-phase approach. Four interconnected themes were developed: loss of bodily autonomy and coercive sexual experiences; reported psychological and emotional consequences; coping and barriers to help-seeking; and emerging agency and empowerment through supportive relationships and disclosure. Participants described emotional distress, fear, sadness, anger, low self-esteem, social withdrawal, and difficulties in intimate relationships. These are reported experiences and should not be interpreted as clinical diagnoses because no standardized diagnostic assessment was undertaken. The findings highlight the importance of confidential, trauma-informed, survivor-centred psychological and social support within local domestic-violence services.

Keywords: Sexual violence, Domestic violence, Psychological impact, Coping, Help-seeking

1. Introduction

1.1 Background

Sexual violence in domestic and intimate-partner relationships is a significant social and public-health concern. Sexual violence may involve sexual acts or attempts to obtain sexual acts without freely given consent, including coercion and other forms of non-consensual sexual behaviour. Within an intimate relationship, the closeness of the perpetrator to the survivor can make disclosure, separation and access to support particularly difficult (World Health Organization, 2013).

Research conducted internationally has associated sexual violence with a range of psychological difficulties, including anxiety, depression, post-traumatic stress symptoms, fear, self-blame and social withdrawal (Campbell et al., 2009; Dworkin et al., 2017). However, symptoms in a qualitative account do not establish a psychiatric diagnosis. The present study therefore focuses on participants' reported experiences rather than clinical diagnosis.

The social context in which violence occurs also matters. Cultural expectations concerning gender roles, family privacy, sexuality and marital relationships can affect disclosure and help-seeking. Research involving Sri Lankan communities has identified the influence of patriarchal socialisation, stigma and silence on responses to sexual violence (Sathasivam-Rueckert, n.d.). Negative responses to disclosure, including blame or minimisation, may further discourage survivors from seeking support, whereas supportive responses can facilitate psychological adjustment (Carlson et al., 2002; Littleton, 2010).

Sexual violence is not experienced in isolation from the relationships and social conditions surrounding a survivor. A person may need to make sense of the incident while also considering housing, income, children, family expectations, reputation and the possibility of further conflict. These concerns can influence whether a survivor speaks about the experience, whom they approach, and what kind of help feels safe. For this reason, an account of psychological impact should consider both the immediate emotional response and the wider circumstances in which the person is living.

Consent is central to understanding sexual violence. Being married or being in an intimate relationship does not remove a person's right to decide whether to participate in sexual activity. Consent needs to be freely given and may not be inferred solely from relationship status, previous sexual activity or silence. Pressure, intimidation, coercion and unwanted sexual behaviour can undermine a person's sense of choice and bodily autonomy. When such experiences occur within a relationship that is otherwise expected to provide safety and care, the contradiction may be especially distressing. Survivors may experience not only fear or anger about an incident but also confusion about the meaning of the relationship and the reliability of a partner.

The term psychological impact in this study refers to experiences described by participants, such as sadness, fear, anger, distress, changes in self-esteem, withdrawal and difficulty expressing feelings. It is used descriptively rather than diagnostically. Psychological responses vary between individuals and over time. Some people may experience intense distress immediately, while others may find it difficult to identify or communicate their reactions. The same person may also experience several emotions at once, including anger toward a partner, concern about the future, shame imposed by social judgement, and a wish to preserve important relationships. A qualitative approach makes it possible to explore these meanings without assuming that every survivor follows the same emotional course.

The study is also situated within a service environment. Mithuru Piyasa provides a relevant setting because the participants had been referred to a service connected with responses to domestic violence. Service-based accounts can illuminate the needs of people who reach support, although they cannot represent all survivors. People who do not disclose violence or who cannot access services may have different experiences and barriers. This distinction is important when interpreting the findings and translating them into recommendations.

Sri Lankan research has examined domestic violence and the role of community-based services. For example, Panadare et al. (2021) examined cases referred to a Mithuru Piyasa counselling centre in Gampola and highlighted the importance of integrating counselling, legal support and public awareness. Such evidence demonstrates the relevance of local support services but does not provide a detailed qualitative account of

survivors' lived experiences of domestic sexual violence in Negombo.

1.2 Research Gap and Rationale

Existing literature provides substantial evidence on the psychological consequences of sexual violence internationally and some evidence on domestic violence in Sri Lanka. Nevertheless, the literature reviewed for this study provides comparatively limited qualitative evidence focused specifically on how adult female survivors in the Negombo Divisional Secretariat Division describe the psychological consequences of sexual violence within domestic relationships, how they cope, and how they experience or perceive available support. The present study addresses this contextual gap by examining survivor narratives from a local service setting.

The rationale for a locally situated study is not that international findings are irrelevant, but that general findings do not fully explain how distress is interpreted and managed in a particular community. The language used to describe an experience, the people considered trustworthy, the practical options available to a survivor, and the anticipated consequences of disclosure may all be shaped by context. A local qualitative study can therefore contribute detailed descriptions that complement broader epidemiological and review evidence.

The present inquiry concentrates on four connected areas: experiences of coercion and bodily autonomy; reported psychological and emotional consequences; coping and help-seeking; and the role of supportive relationships in restoring a sense of agency. These areas are connected rather than separate. For example, a survivor's emotional response may influence whether she withdraws from others, while the response of a trusted person may affect whether she feels able to seek professional assistance. Similarly, the availability of a confidential service may influence whether distress can be discussed safely. Examining these relationships allows the study to consider the experience as a process embedded in daily life rather than as a single event.

The study is significant because it preserves the local context of survivors' experiences while avoiding assumptions that the findings represent all Sri Lankan women. Its purpose is to generate context-specific

qualitative insight that can inform counselling, healthcare, community support and future research.

1.3 Research Problem

There is limited context-specific qualitative evidence describing how adult female survivors of sexual violence within domestic relationships in the Negombo Divisional Secretariat Division experience psychological distress, respond to those experiences, and perceive sources of support. Without such accounts, local counselling and support services may have insufficient survivor-informed information for understanding barriers to disclosure, coping needs and pathways toward recovery.

1.4 Research Questions

- How do adult female survivors describe the psychological and emotional effects of sexual violence within domestic relationships?
- How do survivors describe how they cope with these experiences?
- What social, cultural, relational or service-related factors do survivors describe as influencing disclosure and help-seeking?
- What forms of interpersonal, professional or community support do survivors perceive as helpful?

1.5 Research Objectives

Main objective

To explore the psychological and emotional experiences of adult female survivors of sexual violence within domestic relationships in the Negombo Divisional Secretariat Division, Sri Lanka.

Specific objectives

- To explore survivors' reported psychological and emotional experiences following sexual violence.
- To understand the coping responses described by survivors.
- To examine social, cultural, relational and service-related influences on disclosure and help-seeking.
- To describe the forms of support survivors perceive as helpful and identify implications for survivor-centred services.

1.6 Significance

Academically, the study contributes qualitative evidence from a specific Sri Lankan setting and extends discussion beyond prevalence to survivors' descriptions of psychological experience, coping and support. Practically, the findings may assist counsellors, healthcare providers and community support services in developing confidential, culturally responsive and survivor-centred approaches. The findings should be interpreted as context-specific rather than statistically generalizable.

The academic value of this study lies in giving attention to survivors' own descriptions and in distinguishing their accounts from assumptions made by professionals or researchers. Qualitative evidence can help identify questions that require further investigation, reveal gaps in service provision as perceived by participants, and provide language that is meaningful to the people receiving support. It cannot establish the frequency of particular experiences in the wider population, nor can it determine that sexual violence alone caused every reported emotional or physical response.

The practical value is similarly bounded but important. Services may use the findings as a prompt to examine how privacy is protected, how questions are asked, how survivors are offered choices, and how referrals are explained. The study does not evaluate the effectiveness of a particular intervention. Instead, it identifies participant-described experiences and support needs that can inform reflective practice and future service evaluation.

2. Literature Review

2.1 Psychological Consequences of Sexual Violence

International evidence consistently indicates that sexual violence is associated with substantial psychological distress. Dworkin et al. (2017), in a meta-analysis of sexual assault victimisation and psychopathology, reported elevated psychological distress across a range of outcomes. Campbell et al. (2009) similarly described associations between sexual assault and post-traumatic stress, depression, anxiety, substance-related problems and suicidality. These studies provide a background for understanding why participants in the present study may describe emotional and psychological consequences;

they do not, however, establish that any individual participant has a particular disorder.

Longitudinal and epidemiological studies have also documented fear, anxiety and depressive symptoms following sexual assault (Kilpatrick et al., 1981; Kessler et al., 1995). For a qualitative study, the value of this literature is primarily interpretive: it provides a context against which participants' accounts can be considered while retaining a clear distinction between reported experiences and clinical assessment.

The psychological consequences of sexual violence should not be reduced to a single expected response. Emotional reactions can include fear, sadness, anger, shame, numbness, confusion, self-blame or a sense of betrayal. Some survivors may report changes in sleep, concentration, motivation or social participation. Others may focus first on practical concerns, such as safety, family responsibilities or financial stability, and only later find space to describe emotional consequences. Such differences do not indicate that one response is more authentic than another. They underline the need for careful listening and individualised assessment.

A further consideration is the relationship between an event and the meaning assigned to it. When unwanted sexual behaviour occurs within a close relationship, the survivor may be responding to the behaviour itself and to what it signifies about trust, respect and control. A partner may previously have been an important source of companionship or material support. The experience of coercion can therefore complicate the survivor's understanding of the relationship and of her own decisions. Where a relationship continues, distress may be affected by whether unwanted behaviour persists, whether the partner acknowledges the harm, and whether the survivor has access to safety and support. The current study does not measure these processes independently, but they provide useful context for interpreting participants' narratives.

It is important to distinguish association from causation. The cited literature reports relationships between sexual violence and psychological difficulties, but the present study is not designed to isolate causes or compare exposed and unexposed groups. Participants' accounts may reflect multiple experiences and circumstances. Accordingly, the findings are presented as experiences reported in the context of sexual violence rather than

proof that a particular incident caused a particular symptom or disorder.

2.2 Domestic and Intimate-Partner Sexual Violence

Domestic violence can involve physical, emotional and sexual forms of abuse. Sexual violence within an intimate relationship may be particularly difficult to disclose because the perpetrator may be a spouse or partner and because survivors may face economic, relational or social pressures. The literature therefore supports examining sexual violence not only as an individual event but also within the relationship and social environment in which it occurs.

Panadare et al. (2021) found that domestic-violence cases presenting to a Mithuru Piyasa counselling service in Gampola involved multiple forms of violence and highlighted the value of coordinated counselling and legal responses. The present study extends this local service perspective by concentrating specifically on survivors' narratives concerning sexual violence and psychological experience in Negombo.

2.3 Sociocultural Influences and Help-Seeking

Disclosure is shaped by social responses and cultural expectations. Research on Sri Lankan immigrant communities suggests that gender norms and stigma can encourage silence around sexual violence (Sathasivam-Rueckert, n.d.). Research on social responses to sexual-assault disclosure further indicates that blame, minimisation and unsupportive reactions may worsen psychological distress, while supportive responses may facilitate adjustment (Carlson et al., 2002; Littleton, 2010). These findings support the inclusion of help-seeking and social support as central components of the present study.

Help-seeking is not simply a matter of knowing that a service exists. A person also needs to believe that the service will respond respectfully, protect private information and offer useful options. Previous negative encounters, uncertainty about confidentiality, fear of being judged, or difficulty travelling to a service may all influence willingness to seek help. These are possible contextual considerations rather than barriers that can automatically be attributed to every participant in this study.

Informal support can be valuable, but the response of relatives or friends is not always predictable. Listening

without interruption, believing the person, acknowledging that coercion is not the survivor's fault, and asking what assistance is wanted may support disclosure. By contrast, minimising the experience, asking accusatory questions, insisting on a particular decision or spreading information without permission may increase distress and discourage further help-seeking. The studies cited above provide a basis for considering social responses as relevant to adjustment, although the current sample is too small to establish the effect of any one response.

Cultural responsiveness should not mean treating culture as fixed or assuming that all Sri Lankan families share the same values. People differ by generation, religion, economic circumstances, education, family structure and personal belief. Culture may provide sources of connection and meaning as well as expectations that constrain disclosure. Spiritual practice, for example, was described by some participants as a source of comfort. A sensitive service response should ask what matters to the individual rather than assume that religious, family or community involvement will always be either helpful or harmful.

2.4 Sri Lankan Evidence and Research Gap

A useful distinction in reviewing local evidence is the difference between research that estimates the extent of violence and research that explores the meanings attached to it. Both forms of evidence are valuable, but they answer different questions. Quantitative studies can help describe patterns and associated factors across larger samples, while qualitative interviews can show how people understand particular events, how they decide whether to disclose them, and what support they consider acceptable. The present study contributes to the second purpose. It should not be read as a substitute for population-level research or as evidence that the ten participants represent all women in the district.

Local service settings are also important because they are places where personal experiences meet institutional responses. A service may offer a route to counselling or referral, yet the person's willingness to use it can depend on privacy, trust, practical access and expectations about how staff will respond. Research based on service users can therefore help identify questions about the accessibility and acceptability of support. However, people who never reach a service may face different

constraints, and their experiences are not captured here. Future work could explore this gap through ethically designed community research that does not expose participants to additional risk.

The literature reviewed for this manuscript also points to the need for careful terminology. Domestic violence, intimate-partner violence and sexual violence overlap but are not interchangeable terms. Domestic violence may include physical, psychological, economic and sexual abuse; sexual violence refers to non-consensual sexual acts or behaviours and may occur within or outside an intimate relationship. Using these terms precisely helps prevent the psychological consequences of sexual violence from being obscured within a broader category of domestic conflict. It also avoids suggesting that coercion is merely a disagreement between partners. The present study focuses specifically on sexual violence within domestic relationships while acknowledging the broader context of domestic violence.

Sri Lankan research has documented intimate-partner violence and the role of counselling services (Jayatilleke et al., 2015; Panadare et al., 2021), while regional and international studies provide broader evidence concerning psychological consequences. However, the reviewed literature does not sufficiently illuminate the lived experiences of adult female survivors of domestic sexual violence in the Negombo Divisional Secretariat Division. The present qualitative study therefore focuses on the meanings participants attach to their experiences, their coping responses and their perceptions of support.

3. Methods

3.1 Research Design

A qualitative descriptive design was used to explore survivors' lived experiences of sexual violence within domestic relationships. A qualitative approach was considered appropriate because the study sought detailed accounts of emotions, meanings, coping responses and support experiences rather than numerical estimates or clinical diagnoses.

3.2 Study Setting and Participants

The study was conducted in the Negombo Divisional Secretariat Division of Sri Lanka. Participants were adult female survivors of sexual violence within domestic relationships who had been referred to the

Mithuru Piyasa Centre at Negombo District General Hospital. The final sample comprised 10 participants. Detailed individual profiles have been removed from the revised manuscript to strengthen anonymity.

Inclusion criteria:

Adult women with lived experience of sexual violence within a domestic or intimate-partner relationship, referred to the study setting, and willing and able to provide informed consent.

Exclusion criteria:

Should not have severe mental instability before the interview, Inability to convey consent, Not relevant expertise in the current study.

Depending on consent rates and data saturation, a sample of 10 respondents is anticipated. To preserve the depth and richness of qualitative data rather than their numerical representation, recruitment will continue until subject saturation occurs.

3.3 Sampling

Purposive sampling was used because participants were selected for their direct experience of the phenomenon under investigation. Ten participants were ultimately included. The sample size was considered adequate for the present focused qualitative inquiry because the interviews generated recurring patterns across participants; however, the study does not claim saturation in a quantitative sense.

Recruitment was undertaken through the service context described above. Taking part in this study is completely voluntary. If the client decides to participate, they will be asked to sign an informed consent form before the interview begins. Participants are free to withdraw from the study at any time without giving a reason. Choosing not to participate or withdrawing from the study will not affect any services, treatment, or support that the client receives. If the client agrees to participate, will be invited to take part in a one-to-one semi-structured interview. The interview will: Take approximately 30-60 minutes. Be conducted in a private and comfortable setting. Focus on the client's experiences, thoughts, and feelings related to the research topic. Be audio-recorded only with the client's permission to ensure accurate data collection. Participants may decline to answer any question that makes them uncomfortable. Some interview questions may involve discussing sensitive or

emotional experiences. This may cause temporary emotional discomfort or distress. If the client feels uncomfortable at any time, they may: Take a break. Skip any question. Stop the interview. Withdraw from the study without any consequences. If needed, appropriate counselling or psychological support services will be made available.

The small, purposively selected sample is consistent with the exploratory purpose of the research. In qualitative work, sample adequacy is assessed in relation to the focus of the question, the specificity of the participant group, the depth of interviews and the richness of the data, rather than by statistical representativeness alone. Ten interviews can provide detailed accounts for a focused study, but the number does not guarantee that every possible perspective has been captured. The findings should therefore be understood as an account of these participants' narratives within this setting.

Consent should be informed and ongoing: participants need to understand the purpose of the research, what participation involves, how the information will be used, and the limits of confidentiality. The opportunity to decline questions or stop the interview helps preserve control. These choices are particularly relevant when the research topic itself concerns a loss of control over personal boundaries. Participation should never be treated as a condition for receiving clinical or social support.

Privacy during recruitment and interviewing is also important. Information about participation should not be disclosed to partners or other family members without permission, and identifying details should be excluded from reports wherever possible. Audio files, transcripts and consent records should be stored securely with access limited to authorized person.

3.4 Data Collection

Primary data were collected through one-to-one, semi-structured, in-depth interviews conducted at the Mithuru Piyasa counselling unit. Interviews lasted approximately 30–60 minutes, were conducted in the participants' preferred/native language, and were audio-recorded only with permission. Interviews were transcribed verbatim. Field notes were used to record relevant contextual and non-verbal observations.

The former heading "Data Mining" has been replaced with "Data Collection" because the study involved qualitative interviewing rather than data mining.

The researcher-developed interview guide was informed by the study objectives and literature concerning sexual violence, psychological consequences, coping and help-seeking.

3.5 Interview Guide

The demographic questions were separated from the substantive interview questions. The revised guide focuses on the research questions and avoids unnecessary or overly specific questions about sexual practices unless those details are volunteered and are necessary to understand the phenomenon.

- Please tell me, in your own words, about your experience of sexual pressure, coercion, or non-consensual sexual behaviour within your relationship.
- How did you feel emotionally and psychologically after these experiences?
- How have these experiences affected your sense of self, relationships or everyday life?
- What did you do to cope with the emotional effects of these experiences?
- Who, if anyone, did you turn to for support, and what made it easier or more difficult to seek help?
- What types of professional, family, community, or other support do you think would be helpful?
- Is there anything else about your experience that you would like to add?

Demographic information (for example, age range, employment status and other characteristics necessary for the study) was collected separately and is not treated as a research question.

3.7 Data Analysis

The interview data were analysed using thematic analysis following the six phases described by Braun and Clarke (2006). First, the researcher became familiar with the transcripts through repeated reading. Second, meaningful segments were assigned initial codes. Third, related codes were grouped into candidate themes. Fourth, candidate themes were reviewed against the coded extracts and the full dataset. Fifth, themes were defined and named to capture their central organising concepts. Sixth, the findings were written by presenting

participant-derived evidence first and interpretation second.

Coding was conducted manually. Field notes were used as contextual material rather than as independent evidence that could 'validate' interview themes. The analysis therefore does not claim triangulation unless a systematic triangulation procedure was actually conducted.

An illustrative analytical pathway was: participant statement → initial code → focused code → candidate theme → reviewed theme. Examples include: "I find it difficult to express the psychological impact..." → difficulty expressing distress → emotional distress/communication difficulty → reported psychological and emotional consequences; "I talk to my sister" → disclosure to trusted person → informal support → coping and support; "This is the first time I've talked about it" → first disclosure → disclosure as a form of agency → emerging agency and empowerment.

3.8 Reflexivity

Because the topic is sensitive and the researcher collected and interpreted the interviews, reflexivity is important. The researcher should explicitly describe their professional/clinical relationship to the study setting, any prior relationship with participants, assumptions about sexual violence, and steps taken to reduce interpretive bias.

3.9 Trustworthiness

The reporting of qualitative findings benefits from a clear connection between the research questions, the interview guide, the coding process, and the final themes. Readers should be able to understand why each theme is relevant to the study objectives and how the interpretation was derived from participants' descriptions. In this manuscript, the four themes align with the questions about experiences, psychological effects, coping, and support. This alignment provides a coherent structure, although it does not mean that the themes are exhaustive or mutually exclusive.

The use of verbatim transcription supports attention to participants' language, while repeated reading supports familiarity with the context of each account. If the researcher made analytic notes during coding, those notes can help document why a code was created or why two codes were grouped. If a supervisor or another

researcher reviewed the analysis, the nature of that review should be described accurately. The current manuscript does not establish that independent coding or participant checking occurred, so neither should be claimed unless supported by records. Methodological transparency is preferable to adding procedures simply because they are commonly recommended in qualitative research.

Transferability requires a balance between context and privacy. Readers need sufficient information about the service setting, the participant group and the focus of the interviews to judge whether the findings may be relevant elsewhere. At the same time, detailed personal profiles can make a participant identifiable, especially in a small local sample. The decision to omit detailed combinations of age, occupation and location is therefore consistent with protecting confidentiality. The findings can be useful to practitioners in similar settings without being presented as universal conclusions.

Trustworthiness was considered in relation to credibility, dependability, confirmability and transferability. Credibility was supported by in-depth interviewing, verbatim transcription, and repeated engagement with the transcripts during analysis. Dependability and confirmability require a transparent record of coding and theme development. Transferability is limited because participants were recruited from one service setting in one geographical area and the sample was small.

4. Results

Ten adult female participants contributed to the analysis. To protect anonymity, individual combinations of age, occupation, location and detailed experience are not reproduced. The analysis produced four interconnected themes. Theme 1 concerns the experience of coercion and loss of bodily autonomy. Theme 2 concerns reported psychological and emotional consequences. Theme 3 integrates coping with barriers and facilitators of help-seeking. Theme 4 concerns emerging agency and empowerment through disclosure, supportive relationships and recognition of personal needs.

4.1 Themes

Theme 1: Loss of Bodily Autonomy and Coercive Sexual Experiences

Participants described experiences involving sexual pressure, coercion and non-consensual sexual behaviour

within intimate relationships. Several accounts included repeated unwanted sexual acts, pressure to engage in particular sexual activities, unwanted exposure to sexual material, or recording/photographic behaviour without consent. Participants' descriptions conveyed a loss of control over their bodies and sexual boundaries.

The findings are presented here as participants' accounts rather than as evidence of a specific psychological disorder or attachment style. The repeated description of unwanted sexual behaviour suggests that bodily autonomy and consent were central concerns across the narratives. In the context of the present study, these accounts are consistent with literature describing sexual violence as an experience that can undermine safety, trust and psychological wellbeing (Campbell et al., 2009).

Theme 2: Reported Psychological and Emotional Consequences

Participants described a range of emotional and psychological experiences, including sadness, fear, anger, emotional exhaustion, low self-esteem, distress, social withdrawal, reduced interest in sexual activity and difficulty expressing emotions. Some participants described headaches or other physical experiences alongside emotional distress. One participant reported receiving psychiatric treatment, while another had accessed psychological counselling.

The accounts also included expressions of self-directed anger, crying, sleeping for extended periods, feelings of being unwanted, and uncertainty about what type of support would be helpful. These descriptions are best understood as reported symptoms and experiences. Because the study did not use standardized diagnostic instruments or clinical diagnostic interviews, terms such as PTSD, depression, dissociation, complicated PTSD, hypervigilance, and avoidant attachment should not be presented as established diagnoses or participant characteristics.

Participant 4 stated, "I find it difficult to express the psychological impact of repeated coercion and exposure to pornography." This statement illustrates difficulty articulating emotional consequences. Participant 10 described feelings of disgust and emotional collapse, while other participants described crying, anger, or withdrawal. These narratives suggest substantial

emotional burden without establishing causality or diagnosis.

Theme 3: Coping, Help-Seeking and Support Systems

Participants used a range of coping responses. These included psychological counselling, talking to a trusted person, seeking support from a sister, prayer or church involvement, crying, sleeping, isolation, and verbal expression of anger. Some responses appeared to provide immediate emotional release, whereas others may have reduced opportunities for social connection or formal support. The study does not classify these responses as clinically adaptive or maladaptive unless participants themselves described their meaning.

Help-seeking varied across participants. Some had accessed professional support, whereas others had not sought formal assistance. The accounts suggested the importance of confidentiality and trust. Participant 6 stated, "I talk to my sister," indicating the importance of an available trusted relationship. Participant 5 expressed a need for "someone trustworthy who I can talk to in confidence." Participant 7 stated, "This is the first time I've talked about it," highlighting the significance of disclosure itself.

The findings therefore indicate that support is not limited to formal services. Trusted family relationships, spiritual resources and professional counselling all appeared in the narratives. At the same time, limited trust, uncertainty about available support, social concerns and reluctance to disclose may create barriers to help-seeking. These observations are consistent with literature emphasising the role of social responses in survivors' adjustment (Carlson et al., 2002; Littleton, 2010).

Theme 4: Emerging Agency and Empowerment

Although participants described experiences of coercion and distress, their narratives also contained examples of agency. Seeking counselling, speaking about the experience for the first time, identifying a trusted person, using spirituality for meaning, and recognising the need for confidential support were all forms of action described by participants.

Participant 1 linked counselling with regaining a degree of mental peace. Participant 4 described prayer and church involvement as sources of comfort. Participant 5

identified the need for a trustworthy person, and Participant 7 described the significance of speaking about her experience for the first time. These accounts suggest that empowerment in this setting may be understood as a gradual process involving voice, recognition of personal needs, supportive relationships, and access to services.

The findings do not demonstrate post-traumatic growth or recovery in a clinical sense. Rather, they show that participants retained or developed forms of agency despite difficult circumstances.

4.2 Themes-by-Participant Matrix

The matrix provides a compact view of the distribution of thematic material across the ten interview accounts. It is an aid to transparency rather than a statistical table. The check marks indicate that the account contributed material to the theme, not that the participant experienced every possible aspect of the theme to the same degree. Similarly, a dash should be interpreted cautiously: it indicates that the available source material did not provide a sufficiently clear example for the analysis, not necessarily that the participant never experienced the issue.

The matrix also demonstrates why thematic analysis should not be confused with counting prevalence. A theme can be analytically important because of the meaning of an account, even if the available material is brief or appears in fewer interviews. Conversely, the presence of a theme across several interviews does not indicate its frequency in the wider population. The matrix is included to show coverage within the dataset and should be interpreted alongside the narrative descriptions and the study's limitations.

3. Coping/help-seeking/support	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4. Agency/empowerment	✓	—	—	✓	✓	✓	✓	—	—	✓

Note. The matrix indicates where the participant narratives contributed evidence to a theme in the revised analysis. A dash indicates that the available source material did not provide a sufficiently clear example for that theme. The matrix is based on the participant accounts contained in the original manuscript and is intended to show analytical coverage, not prevalence.

5. Discussion

5.1 Psychological and Emotional Consequences

The participants' descriptions of sadness, anxiety-like distress, fear, anger, low self-esteem, withdrawal, and emotional exhaustion are broadly consistent with international literature linking sexual violence with psychological distress (Campbell et al., 2009; Dworkin et al., 2017). The contribution of the present study is contextual rather than causal: participants described these experiences within ongoing or past domestic relationships in a specific Sri Lankan service setting. The findings therefore add local qualitative detail to a broader evidence base. The study did not undertake standardized diagnostic assessment. The present interpretation therefore uses the participants' reported experiences rather than assigning diagnoses.

5.2 Coping and Support

The range of coping responses identified in the present study is consistent with the importance of social and relational support described in previous research. Carlson et al. (2002) and Littleton (2010) emphasised the consequences of social responses to disclosure. In the present study, trusted interpersonal relationships, counselling and spiritual practices were described as sources of support, while isolation, uncertainty and limited disclosure were also evident.

This finding has practical relevance for local services. A survivor-centred response should not assume that all

Theme	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P10
1. Bodily autonomy /coercion	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2. Psychological/emotional consequences	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

survivors will immediately seek formal psychological care. Confidentiality, trust, culturally responsive communication and the availability of safe disclosure pathways may be important conditions for engagement.

5.3 Sri Lankan Context

The findings also correspond with literature describing the influence of gender norms, stigma and cultural expectations on responses to sexual violence in Sri Lankan communities (Sathasivam-Rueckert, n.d.). Panadare et al. (2021) similarly highlighted the role of Mithuru Piyasa counselling services and the importance of coordination with legal and public-awareness mechanisms. The present study contributes by showing how these broader issues are experienced at the level of individual narratives in Negombo.

At the same time, the study does not establish that stigma or patriarchal norms affected every participant in the same way. Such factors should be understood as contextual influences that may shape disclosure and coping rather than as universal explanations for participants' experiences.

5.4 Theoretical Interpretation

The ecological perspective also helps avoid placing responsibility for the effects of violence on the survivor. Individual emotions and coping responses are connected to interpersonal conditions and to the opportunities or constraints present in the surrounding environment. For example, the availability of a trusted person may create a pathway to disclosure, while fear of judgement may make the same disclosure more difficult. These contextual factors do not determine every individual's response, but they help explain why support needs to be considered at more than one level.

A trauma-informed approach is consistent with the study's emphasis on safety, choice, collaboration and respect. In practice, this means explaining what will happen during an interview or service contact, asking permission before sensitive questions, avoiding unnecessary repetition, and allowing the person to decide how much detail to share. It also means recognising that a person may not be ready to make decisions about the relationship while still needing support for immediate distress. The concept is used here to inform service implications, not to infer a diagnosis from the interview material.

The findings also invite reflection on agency. Participants' descriptions of counselling, trusted relationships, spirituality and disclosure suggest that responses to violence include efforts to find support and regain a sense of control. Agency should not be equated with complete recovery or with making a particular decision, such as ending a relationship or taking legal action. It may instead involve identifying a need, choosing whom to tell, asking for confidentiality, or considering available options. This understanding is compatible with a survivor-centred approach because it recognises the participant as an active person whose choices should be respected.

Ecological Systems Theory, Attachment Theory and Trauma Theory could apply simultaneously. Ecological Systems Theory is the primary contextual lens. It helps situate participants' experiences within relationships, family/community support, and wider social systems. Trauma-informed concepts and attachment perspectives are used only as supporting interpretive perspectives and are not used to diagnose attachment styles or trauma disorders.

This approach is more proportionate to a small qualitative study and keeps participant accounts central to the analysis.

An ecological perspective is useful because the narratives concern more than individual emotional reactions. At the interpersonal level, the partner's behaviour and the availability of trusted relatives may shape the experience. At the service level, confidentiality, access to counselling and coordination among professionals may influence help-seeking. At the broader social level, expectations about marriage, gender and privacy may affect what survivors anticipate after disclosure. These levels can interact, but the study does not establish the relative contribution of each one.

Trauma-informed concepts provide a complementary reminder that experiences of coercion may affect a person's sense of safety, trust, choice and control. Applying these concepts does not mean diagnosing trauma-related disorders. Similarly, attachment theory may raise questions about trust and close relationships, but the study did not assess attachment patterns and therefore does not classify participants by attachment style. The theories are used as interpretive lenses to organise reflection, not as tests of individual participants.

6. Implications

6.1 Counselling and Mental Health Services

- Strengthen confidential, survivor-centred counselling pathways for people disclosing domestic sexual violence.
- Use trauma-informed communication and allow survivors control over the pace and content of disclosure.
- Provide clear referral pathways for psychological, medical, legal and social support.
- Develop staff training on consent, domestic sexual violence, confidentiality and responding to distress.

6.2 Healthcare and Local Support Systems

- Improve coordination between hospital-based services, counselling services and relevant community or legal support systems.
- Provide private spaces for disclosure and assessment.
- Ensure that participation in research or support services does not compromise confidentiality or access to care.

6.3 Community and Future Research

- Develop culturally responsive awareness programmes addressing consent, respectful relationships and available support.
- Conduct qualitative research in additional Sri Lankan districts to examine similarities and differences across settings.
- Future studies should include clearly documented ethical procedures, reflexivity and trustworthiness strategies and may include male survivors and other underrepresented groups where ethically appropriate.

7. Limitations

- The study involved 10 participants recruited through one service setting in Negombo; therefore, findings are not statistically generalisable to Sri Lankan women as a whole.
- Recruitment through a counselling service may have introduced selection bias because participants who access services may differ from survivors who do not seek support.
- The subject matter is sensitive, and participants may have withheld information or experienced distress, resulting in partial accounts.

- Findings are based on self-reported experiences and researcher interpretation.
- The study was conducted in one local context, limiting transferability to other regions and populations.
- The limitations should guide how the results are used. Because participants were recruited through a service, the study may over-represent women who were able or willing to reach that service and under-represent those who remained undisclosed or faced barriers to access. The accounts are self-reported and may be shaped by memory, the interview relationship, privacy concerns and the participant's readiness to discuss the experience. These factors are not unusual in sensitive qualitative research, but they mean that the findings should be read as situated accounts rather than complete records of every event.
- The small sample and single geographical setting also limit the range of experiences represented. The study does not provide a comparison group, a prevalence estimate, or longitudinal follow-up. It therefore cannot determine how common each experience is, whether reported distress changes over time, or which support approaches produce the best outcomes. Future research could address these questions using designs appropriate to each aim, while maintaining careful ethical safeguards.
- The manuscript also has reporting limitations that should be addressed before publication. The ethics approval details, the researcher's reflexive procedures, and any formal steps used to review or verify the coding should be reported only if they were actually undertaken and documented. Some references in the reference list are marked for verification; their bibliographic details should be checked against the original publications. Expanding the manuscript should not replace these checks or be used to imply methods or evidence that the study did not have.
- An additional priority for future research is to describe service pathways from the survivor's perspective. Studies could explore what information

people receive at first contact, whether they understand their choices, and which practical barriers affect continued engagement. Such work should not presume that all survivors want the same outcome. Rather, it could identify how services can provide a range of options while respecting autonomy and confidentiality. Evaluation research would be needed before claiming that a particular service model improves psychological outcomes.

- Researchers should also consider how language and translation affect interviews. Participants may express distress through everyday phrases that do not map neatly onto clinical terminology. If interviews are conducted in a preferred language and then translated for publication, the process should preserve the intended meaning and avoid making the accounts sound more clinical or certain than they were. Where translation procedures were used, they should be described in the methods section. The current manuscript does not provide detailed translation procedures, so these should be added only if they can be verified from the research records.
- Finally, the ethical responsibilities of research continue after the interview ends. A participant may feel comfortable during the conversation but experience distress later, or may have questions about how the information will be used. Clear contact information, appropriate referral arrangements and careful handling of data can help ensure that participation is not treated as an isolated event. These considerations are particularly relevant when interviewing people who have experienced violations of personal boundaries and trust.

7. Conclusion

The study's contribution is therefore twofold. First, it documents how a small group of women accessing a local service described sexual coercion and its emotional significance within domestic relationships. Second, it highlights the importance of the conditions surrounding disclosure and support, including trust, confidentiality, supportive relationships and culturally responsive practice. These contributions are modest in scope but relevant to local counselling and healthcare practice.

Future studies could build on this work by recruiting participants from more than one service setting, documenting the researcher's reflexive process in greater detail, and exploring how support needs change over time. Research could also examine the experiences of survivors who have not approached formal services, provided that recruitment and participation can be undertaken safely and confidentially. Any larger or comparative study should preserve the distinction between participants' self-described experiences and clinically assessed outcomes.

Overall, the findings support a careful, respectful response to domestic sexual violence. Services should listen without blame, protect privacy, explain options, and recognise that coping and disclosure occur at different paces. The study does not establish prevalence, causality or treatment effectiveness; instead, it offers contextual qualitative insight that can inform practice and guide further research.

This qualitative study explored the reported psychological and emotional experiences of 10 adult female survivors of sexual violence within domestic relationships in the Negombo Divisional Secretariat Division. Four interconnected themes were identified: loss of bodily autonomy and coercive sexual experiences; reported psychological and emotional consequences; coping, help-seeking and support systems; and emerging agency and empowerment. Participants described substantial emotional distress, difficulties in intimate relationships, low self-esteem, withdrawal, anger, sadness and uncertainty about support, alongside counselling, spiritual practices, trusted relationships and disclosure as sources of coping or assistance.

The findings provide context-specific qualitative evidence and should not be interpreted as establishing clinical diagnoses or causal relationships. They nevertheless indicate the importance of confidential, survivor-centred and culturally responsive support. Strengthening local counselling pathways, safe disclosure processes, inter-service coordination and trauma-informed practice may help services respond more effectively to survivors' stated needs.

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Student Teachers' Perspectives on Mindfulness-Based Approaches to Teaching and Classroom Management in Sri Lanka

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Abstract: Mindfulness-based approaches may offer practical possibilities for improving teaching and classroom management by promoting calmness, awareness, emotional regulation, and thoughtful responses to student behaviour. This study examined the perspectives of Bachelor of Education (B.Ed.) student teachers in Sri Lanka regarding the suitability and application of such approaches in school teaching and classroom management. A convergent parallel mixed-methods design was employed with 44 student teachers from several Sri Lankan universities, representing Years 1–4. Data were collected through a structured questionnaire comprising five-point Likert-scale items and open-ended questions, analysed using descriptive statistics and thematic analysis, respectively. Participants reported positive perspectives on mindfulness as a teacher quality ($M = 4.48$), its contribution to professional skills ($M = 4.59$), patient communication ($M = 4.55$), calm responses to challenging situations ($M = 4.45$), and stress reduction ($M = 4.43$). Overall, 95.5% agreed that mindfulness enhances teaching effectiveness. Qualitative findings suggested breathing exercises, grounding activities, reflective practices, relaxation music, and calming sounds as potential classroom approaches, while limited time, syllabus demands, and inadequate training were identified as challenges. The findings support considering practical, inclusive, and non-religiously prescriptive mindfulness-based approaches within teacher education and wider school education in Sri Lanka, while recognising the need for appropriate training and context-sensitive implementation.

Keywords: Mindfulness-Based Approaches, Teaching, Classroom Management, Student Teacher, Teacher Education, Sri Lanka

1. Introduction

Education is a complex process that involves not only the transmission of knowledge and the development of academic skills but also the creation of supportive, respectful, and productive learning environments. Teachers are expected to manage classroom interactions, respond appropriately to students' diverse needs and behaviours, maintain positive relationships, and create conditions that support effective learning. These responsibilities require not only pedagogical knowledge and instructional skills but also personal and interpersonal qualities such as patience, emotional awareness, self-regulation, empathy, and the ability to respond thoughtfully to challenging situations. Therefore, attention to teachers' emotional awareness and well-being is an important consideration in discussions of effective teaching and classroom management.

One concept that may be relevant to these responsibilities is mindfulness. Mindfulness has historical roots in Buddhist contemplative traditions, where it involves the cultivation of awareness and the careful observation of present-moment experiences. Anālayo (2003) examined the foundations of mindfulness through a detailed analysis of the *Satipaṭṭhāna Sutta*, a key Buddhist discourse on mindfulness practice. Although mindfulness originated within religious and contemplative traditions, contemporary discussions have also considered its potential applications in secular settings, including education. In the present study, mindfulness is considered in relation to present-moment awareness, emotional regulation, calmness, and thoughtful responses to classroom situations rather than as a religious practice that student teachers must adopt.

The Dalai Lama has also emphasised the importance of compassion, ethical understanding, and emotional development in education. In a discussion on secular ethics in modern education, the Dalai Lama (2020) highlighted the relevance of compassion and ethical values to the holistic development of children. These perspectives are relevant to considering how teachers might respond to students with patience, understanding, and care.

The researcher's interest in mindfulness-based approaches developed partly through reading about Buddhist teachings and the Dalai Lama's perspectives on compassion and education. These readings encouraged consideration of whether mindfulness-related practices could be incorporated into teaching and classroom management in ways that are appropriate for different educational settings and religious or cultural backgrounds.

Research has also examined mindfulness and contemplative approaches in educational contexts. Weare (2019) reviewed evidence concerning mindfulness in schools and reported promising findings, particularly in relation to psychosocial health and well-being, while noting that evidence for outcomes such as behaviour, cognition, and learning was less definitive. In teacher education, Draper-Clarke (2020) explored compassion-based mindfulness training with student teachers at a South African university. The study highlighted the importance of contextualising mindfulness and considering compassion, ethics, and social engagement within teacher education. Such research provides a basis for examining mindfulness in educational settings, although findings from other contexts should not automatically be generalised to Sri Lankan classrooms.

From a classroom perspective, brief mindfulness-based activities may be considered before a lesson begins or when teachers need to respond to challenging situations. For example, guided attention to breathing, a short reflective pause, or a simple grounding activity may provide opportunities to settle attention before engaging in learning. However, these activities should be selected according to students' needs, lesson objectives, available time, and the cultural and religious diversity of the classroom. Relaxation music and calming sounds may also be considered as possible classroom resources, although they should not automatically be classified as mindfulness practices. Their relevance and suitability need to be considered in the particular teaching context.

The researcher's interest in this topic was further informed by practical engagement with mindfulness-related approaches in face-to-face teaching. This experience encouraged the researcher to consider whether such approaches might be relevant to classroom management and whether they could be considered within teacher education. Nevertheless, the researcher's own experience cannot establish the effectiveness or suitability of these approaches across different educational settings. It was therefore important to examine the perspectives of other student teachers regarding their perceived usefulness, possible applications, and implementation challenges.

Against this background, the present study examines student teachers' perspectives on mindfulness-based approaches to teaching and classroom management in Sri Lanka. The study focuses on 44 Bachelor of Education (B.Ed.) undergraduate student teachers from the campus where the researcher teaches. It seeks to understand how these student teachers view the relevance of mindfulness-based approaches, how they believe such approaches might be applied in teaching and classroom management, and what challenges could affect their implementation. The findings may provide context-specific insights for discussions of teacher education and contribute to further research on inclusive, culturally sensitive, and context-appropriate mindfulness-based approaches in Sri Lankan education. Although the findings may inform wider discussions about educational practice and policy, broader evidence from different institutions and teaching contexts would be required before drawing national-level conclusions.

1.1. Background to the Study

Language teaching involves more than the transmission of linguistic knowledge and the development of students' language skills. Teachers are expected to encourage participation, respond to learners' individual needs, manage classroom interactions, and create supportive environments in which students feel comfortable engaging in learning activities. These responsibilities may become particularly challenging when teachers encounter student anxiety, lack of confidence,

disengagement, or disruptive behaviour. Consequently, effective language teaching requires not only pedagogical knowledge and appropriate instructional strategies but also patience, emotional awareness, and the ability to respond thoughtfully to different classroom situations.

Classroom management is closely connected to teachers' ability to recognise and regulate their emotional responses. When unexpected situations arise, teachers may need to make immediate decisions while maintaining positive relationships with students. Mindfulness-based approaches have received attention in educational research because of their potential relevance to teachers' well-being and emotional regulation. Emerson et al. (2017), in their systematic review of mindfulness-based interventions for teachers, examined evidence concerning teachers' psychological well-being and professional experiences. Similarly, Weare (2019) reviewed mindfulness and contemplative approaches in education and discussed their potential benefits, particularly in relation to psychosocial well-being. Although these studies suggest that mindfulness may be relevant to educational practice, further consideration is needed regarding its suitability for different teaching contexts, including language classrooms.

The researcher's interest in the present topic developed through reading about mindfulness and reflecting on its possible applications in teaching. In particular, the researcher considered whether mindfulness-based approaches could be useful before commencing a lesson and when responding to challenging classroom situations. Such approaches may provide opportunities for teachers and students to direct their attention towards the present moment, settle themselves before engaging in learning, and respond more thoughtfully to classroom interactions. Possible practices include brief breathing exercises, grounding activities, and reflective pauses, depending on the needs of the students and the requirements of the lesson. However, the suitability of these practices needs to be considered in relation to the classroom context, available time, learning objectives, and students' cultural and religious backgrounds.

The researcher also became interested in whether awareness of mindfulness-based approaches could be incorporated into teacher education. B.Ed. student teachers are developing the knowledge and competencies required to plan lessons, manage classrooms, establish positive relationships, and respond appropriately to different teaching situations. Raising awareness of approaches that may support teachers' self-awareness and emotional regulation could therefore be worth considering as part of their professional preparation. Research examining compassion-based mindfulness training in teacher education provides a relevant basis for this consideration (Draper-Clarke, 2020). Nevertheless, the inclusion of mindfulness-related content in teacher education should be considered in relation to the perspectives of student teachers, the practical demands of teaching, and the available research evidence.

The researcher's practical engagement with mindfulness-related approaches in face-to-face teaching further motivated an investigation into this topic. Rather than relying exclusively on personal experiences, the researcher considered it important to explore the perspectives of other B.Ed. undergraduate student teachers. Their views could provide insight into how they understand the relevance of mindfulness-based approaches to language teaching and classroom management, how they believe such approaches might be applied in educational settings, and what practical challenges they anticipate. Examining these perspectives is particularly relevant when considering whether mindfulness-related awareness deserves further attention within teacher education programmes.

The issue may also have broader relevance to teacher preparation and educational development in Sri Lanka. Understanding student teachers' perspectives may provide an initial basis for further discussion about the possible place of mindfulness-based approaches in professional development and teacher education curricula. In the longer term, context-specific research may contribute to wider discussions concerning educational practice and national education policy. However, broader consultation with student teachers, practising teachers, teacher educators, and other relevant

stakeholders across Sri Lanka would be necessary to assess the suitability and feasibility of wider implementation.

Against this background, the present study examines student teachers' perspectives on mindfulness-based approaches to teaching and classroom management in Sri Lanka. It focuses on 44 Bachelor of Education (B.Ed.) undergraduate student teachers from the campus where the researcher teaches. The study was undertaken to understand their perspectives on the relevance and possible application of mindfulness-based approaches and the considerations involved in using them in educational settings. Through this investigation, the researcher seeks to contribute to discussions about the potential role of mindfulness-related awareness in language teaching, classroom management, and the professional preparation of future teachers.

1.2. Problem Statement

Classroom management is commonly associated with the use of rules, routines, instructional strategies, and approaches to managing student behaviour. However, teachers' internal awareness and emotional self-regulation may also be relevant to how they respond to classroom challenges, communicate with students, and maintain supportive learning environments. Mindfulness-based approaches have been examined in international educational research for their potential relevance to teachers' well-being and emotional regulation (Emerson et al., 2017; Weare, 2019). Nevertheless, further context-specific investigation is needed to understand how such approaches are perceived by student teachers within the Sri Lankan educational context.

Although mindfulness may offer a possible approach to developing awareness and encouraging considered responses to classroom situations, its perceived relevance to language teaching and classroom management, as well as its potential place in teacher education in Sri Lanka, requires further examination. In particular, it is important to understand whether B.Ed. undergraduate student teachers recognise the possible benefits of

mindfulness-based approaches, how they believe these approaches could be applied in teaching and classroom management, and what practical challenges might affect their use. Without an understanding of student teachers' perspectives, it is difficult to assess whether mindfulness-related approaches warrant further consideration within teacher preparation and professional development.

Therefore, the problem addressed by this study is the need for context-specific evidence concerning B.Ed. undergraduate student teachers' perspectives on mindfulness-based approaches to teaching and classroom management in Sri Lanka. Focusing on 44 B.Ed. undergraduate student teachers from the campus where the researcher teaches, the study examines their perspectives on the relevance, possible applications, and perceived challenges of these approaches. The study may provide an initial basis for further research and discussion about raising awareness of mindfulness within teacher education and considering its potential relevance to educational practice in Sri Lanka.

1.3. Objectives of the Study

The study was guided by the following primary objectives:

The first objective was to examine B.Ed. undergraduate student teachers' understanding and perspectives on mindfulness-based approaches to teaching and classroom management. This objective focused on exploring how student teachers understand mindfulness and how they perceive its relevance to their future teaching practices and classroom management responsibilities.

The second objective was to explore student teachers' perspectives on the perceived benefits of mindfulness-based approaches in relation to teachers' professional skills, stress management, emotional regulation, and classroom management. Particular attention was given to how student teachers perceive the potential contribution of these approaches to maintaining calmness, responding thoughtfully to challenging classroom situations, and establishing supportive learning environments.

The third objective was to investigate student teachers' views on the practical application of mindfulness-based approaches in teaching and classroom management, the challenges associated with their implementation, and their potential inclusion in Bachelor of Education (B.Ed.) teacher education programmes. This objective aimed to understand how student teachers believe these approaches could be incorporated into teaching practices and teacher preparation, while identifying possible practical considerations and barriers to their use.

2. Material and Methods

This study adopted a convergent parallel mixed-methods research design to explore student teachers' perspectives on mindfulness-based approaches to teaching and classroom management in Sri Lanka (Creswell & Creswell, 2018). The selection of this design was guided by the nature of the research problem and the objectives of the study, which required an understanding of participants' general response patterns as well as their explanations, opinions, and suggestions. Since the study aimed to examine student teachers' understanding of mindfulness-based approaches, explore their perspectives of the potential benefits of these approaches, and investigate their views on practical applications, implementation challenges, and possible inclusion in teacher education programmes, relying exclusively on quantitative or qualitative data would have provided only a partial understanding of the topic. A mixed-methods approach was therefore considered suitable because it enabled the researcher to examine the research problem through complementary forms of evidence.

The convergent parallel design involves collecting quantitative and qualitative data during the same general phase of a study, analysing each dataset separately, and integrating the results during interpretation (Creswell & Creswell, 2018). In the present study, the quantitative component was intended to identify general patterns in participants' responses to structured questionnaire items, while the qualitative component was designed to obtain a deeper understanding of the meanings and

explanations participants attached to their views. The quantitative data provided an overview of participants' levels of agreement with statements concerning mindfulness-based approaches, whereas the qualitative data enabled them to elaborate on their perspectives, describe possible applications, identify anticipated benefits and challenges, and make suggestions relevant to teacher education. The two components were therefore intended to complement one another and provide a more comprehensive account of the research topic.

The quantitative and qualitative components were treated as distinct but related strands of the research process. Quantitative data were analysed using descriptive statistical procedures to summarise participants' responses and identify patterns across the questionnaire items. These results helped establish an overall picture of the perspectives expressed by the participating student teachers. However, numerical summaries alone could not fully explain why participants held particular views, how they understood mindfulness-based approaches in relation to their teaching responsibilities, or what practical considerations they believed might influence their application. The qualitative component addressed this need by allowing participants to express their views in their own words. Their responses provided additional context for interpreting the quantitative findings and helped identify recurring ideas concerning the relevance, practical use, and potential limitations of mindfulness-based approaches in teaching and classroom management.

The selection of a mixed-methods design was also relevant because mindfulness-based approaches may be understood and interpreted differently according to individuals' educational backgrounds, teaching experiences, and professional circumstances. For example, participants may perceive these approaches as potentially useful for preparing themselves before a lesson, maintaining calmness during challenging classroom situations, responding thoughtfully to student behaviour, or developing greater awareness of their own emotional responses. Others may identify practical concerns relating to lesson time, classroom conditions, student needs, cultural or religious

considerations, or the suitability of particular activities for different educational settings. The questionnaire was therefore intended to capture both structured responses and participants' explanations of such considerations. The study did not assume that all participants shared the same understanding of mindfulness or that they necessarily supported its use in educational settings. Instead, it sought to examine the range of perspectives expressed by the participating student teachers.

The methodological approach was aligned with the three primary objectives of the study. First, the quantitative and qualitative data were used to examine participants' understanding and perspectives on mindfulness-based approaches to teaching and classroom management. Second, the data were examined to explore participants' views on the perceived benefits of these approaches in relation to professional skills, stress management, emotional regulation, and classroom management. Third, the study investigated participants' views on the possible application of mindfulness-based approaches, the challenges associated with their use, and their potential inclusion in B.Ed. teacher education programmes. The combination of quantitative and qualitative evidence enabled the researcher to consider these objectives from both a descriptive and an interpretive perspective.

Following separate analyses of the quantitative and qualitative datasets, the findings were considered together during the interpretation stage. This process involved examining whether the two datasets presented similar perspectives, whether the qualitative responses helped explain patterns observed in the quantitative results, and whether differences emerged between the two forms of evidence. Areas of convergence could strengthen the interpretation of a particular pattern, while complementary or differing findings could highlight the complexity of participants' perspectives and the need for further investigation. The purpose of integration was not to assume that the two datasets would necessarily produce identical findings, but to develop a more balanced understanding of the research problem by

considering both numerical patterns and participants' explanations.

The study was exploratory in its focus on participants' perspectives and perceived applications of mindfulness-based approaches. It did not involve an experimental intervention, a comparison group, or the measurement of changes in teaching performance or student outcomes following mindfulness activities. Consequently, the methodology was not intended to establish causal relationships or demonstrate the effectiveness of mindfulness-based approaches. Rather, it was designed to document and interpret the views of the participating student teachers and identify issues that may warrant further investigation in teacher education and classroom practice. The findings were interpreted in accordance with the scope of the design and the characteristics of the sample, with appropriate caution regarding the extent to which the results might apply to other educational contexts.

Overall, the convergent parallel mixed-methods design provided a systematic framework for examining student teachers' perspectives on mindfulness-based approaches to teaching and classroom management. By combining descriptive statistical analysis with thematic analysis of open-ended responses, the study sought to provide both an overview of participants' views and a deeper understanding of the ideas and considerations underlying those views. This methodological approach was intended to support a context-specific interpretation of the findings and contribute to further discussion about the possible relevance of mindfulness-related awareness in teacher preparation, professional development, and classroom practice in Sri Lanka.

2.1. Context and Participants

The study was conducted among 44 Bachelor of Education (B.Ed.) undergraduate student teachers enrolled in an external degree programme at a state university in Sri Lanka. Convenience sampling was employed to select participants based on their accessibility and availability to participate in the study. All participants were pursuing a B.Ed.

degree and had teaching experience, although the nature of their teaching engagement varied. Of the 44 participants, 35 (79.5%) were practising in-service teachers who were upgrading their academic qualifications while continuing their teaching careers. The remaining nine participants (20.5%) were student teachers undertaking a three-month teaching practice placement in government schools as a component of their degree programme. Therefore, although all participants were identified as B.Ed. undergraduate student teachers in the present study, most were already employed as teachers, while the others gained classroom teaching experience through the practical training required for their degree. This distinction was relevant to the study because participants could draw on their ongoing professional responsibilities or their supervised teaching practice when expressing their perspectives on mindfulness-based approaches to teaching and classroom management.

The participants represented all four academic years of the undergraduate programme. Of the total sample, 22 participants were in Year 1 (50.0%), three were in Year 2 (6.8%), eight were in Year 3 (18.2%), and 11 were in Year 4 (25.0%). This distribution enabled the study to include perspectives from student teachers at different stages of their undergraduate education. Their academic progression, together with their varying teaching circumstances, provided a relevant context for exploring how they understood the potential relevance of mindfulness-based approaches to teaching and classroom management. However, the distribution across academic years was uneven, with Year 1 students accounting for half of the sample and Year 2 students representing the smallest group. This imbalance was considered when interpreting the findings, particularly in relation to the perspectives of student teachers at different academic levels.

The participants were considered relevant to the study because teaching involves responsibilities such as lesson preparation, classroom interaction, effective communication, responding to challenging situations, and maintaining supportive learning environments. Both practising teachers and student teachers undertaking teaching practice may

encounter situations that require patience, emotional awareness, and thoughtful responses. Exploring their perspectives therefore provided an opportunity to understand how they perceived the relevance of mindfulness-based approaches, how they believed these approaches could be applied in teaching and classroom management, and what practical challenges might influence their use. Nevertheless, the study examined participants' perspectives and perceived applications rather than implementing a mindfulness intervention or measuring its effects on teaching performance or student outcomes.

The findings were interpreted in relation to the characteristics of the participating group. Since convenience sampling was used and all participants were recruited from a single university context, the sample was not intended to represent all B.Ed. undergraduate student teachers in Sri Lanka. The differences in academic year and the nature of teaching experience were also recognised as contextual characteristics relevant to understanding the participants' perspectives. Accordingly, the findings provide context-specific insights into the views of the 44 participating student teachers and may inform further research involving larger and more diverse groups across teacher education institutions in Sri Lanka.

2.2. Research Instrument and Procedure

Data were collected using a structured questionnaire developed by the researcher for the purposes of the present study. The questionnaire was designed to explore B.Ed. undergraduate student teachers' perspectives on mindfulness-based approaches to teaching and classroom management. It included both quantitative and qualitative components to obtain a comprehensive understanding of participants' views, perceived benefits, possible applications, anticipated challenges, and suggestions concerning the relevance of mindfulness-based approaches to teacher education. The instrument was developed in accordance with the research objectives to ensure that the questions addressed the main areas investigated in the study. The questionnaire consisted of closed-ended statements evaluated

using a five-point Likert scale and open-ended questions that allowed participants to explain their perspectives in their own words.

The quantitative component comprised statements evaluated using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). This scale enabled participants to indicate their levels of agreement with statements concerning the perceived relevance of mindfulness-based approaches to teaching and classroom management. The statements addressed areas relevant to the study, including teachers' professional skills, emotional regulation, stress management, calmness when responding to challenging situations, communication, and classroom management. The responses provided numerical data that could be summarised to identify general patterns in participants' perspectives. The use of a consistent response scale also enabled the researcher to compare response patterns across the different statements and examine the extent to which participants expressed agreement or disagreement with the issues presented. However, the responses were interpreted as indicators of participants' reported perspectives rather than as objective measurements of their actual teaching performance or the effectiveness of mindfulness practices.

The qualitative component consisted of open-ended questions designed to obtain more detailed information about participants' understanding and perspectives. These questions allowed participants to express their views without being restricted to predetermined response options. They were intended to explore how participants understood mindfulness-based approaches in educational settings, how they perceived the potential relevance of these approaches to their teaching responsibilities, and how they believed such approaches could be applied in teaching and classroom management. Participants were also given opportunities to describe the benefits they associated with mindfulness-based approaches, identify potential difficulties in applying them, and provide suggestions regarding their possible inclusion in B.Ed. teacher education programmes. The open-ended questions were particularly useful for exploring the reasons underlying participants'

views and identifying issues that might not be fully captured by the closed-ended statements. Their responses therefore provided contextual information that complemented the quantitative data.

The questionnaire was developed to address the three primary objectives of the study. The first objective focused on examining B.Ed. undergraduate student teachers' understanding and perspectives on mindfulness-based approaches to teaching and classroom management. Questions related to participants' views on the meaning and relevance of mindfulness-based approaches contributed to exploring this objective. The second objective concerned participants' perspectives on the perceived benefits of these approaches in relation to professional skills, stress management, emotional regulation, and classroom management. The relevant statements and open-ended questions enabled participants to indicate their levels of agreement and elaborate on the benefits they perceived. The third objective focused on practical applications, implementation challenges, and the possible inclusion of mindfulness-based approaches in B.Ed. teacher education programmes. Open-ended questions addressing these areas enabled participants to describe potential classroom applications, identify practical considerations, and offer suggestions for teacher preparation. This alignment between the questionnaire and the research objectives helped maintain a clear relationship between the data collected and the purpose of the investigation.

The questionnaire was administered to the 44 B.Ed. undergraduate student teachers who participated in the study. All participants were enrolled in an external degree programme at a state university in Sri Lanka. The participating group included 35 practising in-service teachers who were upgrading their academic qualifications while continuing their teaching careers and nine student teachers undertaking a three-month teaching practice placement in government schools as part of their degree programme. The inclusion of participants with these different teaching circumstances provided an opportunity to explore perspectives informed by ongoing professional responsibilities

as well as supervised teaching practice. Nevertheless, the study did not assume that these two groups had identical experiences or understandings of mindfulness-based approaches. The questionnaire provided a common set of questions through which all participants could express their views while allowing individual differences to emerge in their responses.

The use of a structured questionnaire supported consistency in data collection because all participants were presented with the same core questions. At the same time, the combination of closed-ended and open-ended items allowed the researcher to obtain both numerical summaries and descriptive accounts of participants' perspectives. The questionnaire was developed specifically for this study and was not a previously validated instrument. No pilot testing or formal expert review was conducted before data collection. Therefore, the responses were interpreted with consideration of this methodological limitation, and the findings were not presented as evidence of the established validity or reliability of the instrument. The purpose of the questionnaire was to obtain exploratory, context-specific information relevant to the research objectives rather than to establish a standardised measure of mindfulness or teaching competence.

The data obtained through the questionnaire formed the two datasets required for the convergent parallel mixed-methods design. Responses to the five-point Likert-scale statements constituted the quantitative dataset, while the responses to the open-ended questions constituted the qualitative dataset. These datasets were analysed separately using appropriate procedures and subsequently considered together during the interpretation of the findings. The quantitative data provided an overview of participants' response patterns, whereas the qualitative data offered further explanations of their views, perceived benefits, proposed applications, and anticipated challenges. Bringing the two forms of evidence together enabled the researcher to examine areas of agreement, complementary insights, and differences between the findings.

Overall, the questionnaire served as the principal instrument for exploring the perspectives of the participating B.Ed. undergraduate student teachers on mindfulness-based approaches to teaching and classroom management. Its quantitative and qualitative components enabled the study to address the research objectives from complementary perspectives. Since the instrument collected participants' reported views rather than observations of classroom behaviour or measurements taken before and after an intervention, the findings were interpreted in terms of perceived relevance, potential applications, and anticipated challenges. Accordingly, the study did not seek to establish the effectiveness of mindfulness-based approaches or determine their causal effects on teachers or students. Instead, it aimed to develop a context-specific understanding of the participating student teachers' perspectives that could inform further research and discussion concerning teacher education and classroom practice in Sri Lanka.

2.3. Data Analysis

The data collected through the structured questionnaire were analysed using quantitative and qualitative procedures in accordance with the convergent parallel mixed-methods research design adopted for the study. The quantitative and qualitative datasets were analysed separately before the findings were integrated during the overall interpretation stage. This approach enabled the researcher to examine the general patterns in participants' responses to the closed-ended questionnaire items while also exploring their explanations, opinions, and suggestions provided in response to the open-ended questions. The analysis was guided by the three research objectives, which focused on B.Ed. undergraduate student teachers' understanding and perspectives on mindfulness-based approaches to teaching and classroom management, their views on the perceived benefits of these approaches, and their perspectives on practical applications, implementation challenges, and possible inclusion in teacher education programmes.

The quantitative data were analysed using Microsoft Excel and descriptive statistical techniques. Frequencies and percentages were used to summarise the demographic and academic characteristics of the 44 participants. These characteristics included their academic year and teaching-related background, as presented in Table 1. Frequencies indicated the number of participants in each category, while percentages showed the proportion of the total sample represented by each category. This analysis provided an overview of the composition of the sample and helped contextualise the interpretation of participants' perspectives.

The responses to the five-point Likert-scale statements were also analysed using descriptive statistics. The response scale ranged from 1 (Strongly Disagree) to 5 (Strongly Agree). For each statement, the percentages of participants who selected Agree or Strongly Agree were summarised to indicate the overall proportion expressing agreement. The percentage of participants who selected the disagreement response categories was also calculated and presented in Table 2. These percentages enabled the researcher to identify general tendencies in participants' views concerning mindfulness-based approaches to teaching and classroom management. Mean scores out of five were also calculated for the individual statements to summarise the overall tendency of responses. Higher mean scores indicated a greater overall tendency towards agreement with positively worded statements, while lower scores indicated a greater tendency towards disagreement. The mean scores were interpreted alongside the response percentages to provide a more comprehensive description of participants' perspectives.

The demographic and academic characteristics presented in Table 1 were considered when interpreting the findings, particularly because participants represented different academic years and had different teaching-related circumstances. The sample included practising in-service teachers who were upgrading their academic qualifications while continuing their teaching careers, as well as student teachers undertaking a three-month teaching practice placement in government schools as part of their degree programme. These

characteristics provided relevant context for understanding the perspectives expressed by the participating student teachers. However, the descriptive analysis was intended to summarise the characteristics of the sample rather than establish statistically significant differences between participant groups.

The qualitative data consisted of responses to the open-ended questions included in the questionnaire. These responses were analysed thematically to identify recurring ideas, patterns of meaning, and differences in participants' perspectives. The analysis involved familiarisation with the responses, initial coding, grouping related codes into categories, reviewing the categories, and synthesising them into broader themes. During familiarisation, the researcher read the responses repeatedly to develop an overall understanding of the information provided. Relevant statements were then assigned descriptive codes reflecting the ideas expressed by participants. Similar codes were grouped into broader categories, and these categories were examined to identify meaningful patterns related to the research objectives. The final themes were developed from the content of the responses rather than being assumed in advance.

The thematic analysis focused on participants' understanding of mindfulness-based approaches, the benefits they perceived in relation to teaching and classroom management, their views on possible classroom applications, the challenges they anticipated, and their suggestions concerning teacher education. The qualitative findings provided an opportunity to examine the explanations underlying participants' quantitative responses and to identify additional considerations that might not have been captured by the Likert-scale statements. The analysis also allowed differing perspectives to be recognised rather than assuming that all participants shared the same views.

After the quantitative and qualitative datasets had been analysed separately, the findings were integrated during the overall interpretation stage. The response patterns presented in Tables 1 and 2 were considered alongside the themes developed

from the open-ended responses. This process enabled the researcher to examine whether participants' written explanations supported, expanded on, or differed from the general patterns identified in the quantitative results. For example, the agreement percentages and mean scores in Table 2 could be interpreted alongside qualitative responses describing the perceived relevance of mindfulness-based approaches to emotional regulation, professional skills, or classroom management, where these issues were raised by participants. Similarly, qualitative responses identifying practical difficulties could provide additional context for understanding participants' views on the possible application of these approaches.

The analysis remained descriptive and exploratory in nature. No inferential statistical tests were conducted to test hypotheses or determine statistically significant relationships or differences. The findings were interpreted as evidence of the participating student teachers' reported perspectives rather than as proof of the actual effectiveness of mindfulness-based approaches. Since the study did not involve an intervention, a control group, or pre- and post-intervention measurements, it was not designed to establish causal effects on teaching performance, classroom management, or student outcomes.

The interpretation of the findings also took account of the study's methodological limitations. The questionnaire was developed by the researcher for the present study and had not undergone formal validation, pilot testing, or expert review before data collection. In addition, the participants were selected through convenience sampling from an external degree programme at a single state university in Sri Lanka. Consequently, the findings were interpreted as context-specific insights into the perspectives of the 44 participants and were not assumed to represent all B.Ed. undergraduate student teachers or teachers in Sri Lanka.

Overall, the use of descriptive statistical analysis and thematic analysis enabled the researcher to examine participants' perspectives through complementary forms of evidence. Frequencies and

percentages summarised the demographic and academic profile of the participants, while agreement percentages and mean scores described their responses to the Likert-scale statements. Thematic analysis provided a deeper understanding of the views and explanations expressed in the open-ended responses. Integrating these findings supported a comprehensive interpretation of participants' perspectives on mindfulness-based approaches to teaching and classroom management in the context of teacher education in Sri Lanka.

3. Results and Discussion

This section presents and discusses the findings of the study based on quantitative and qualitative data collected from 44 B.Ed. undergraduate student teachers in Sri Lanka. The findings are organised according to the research objectives and draw on descriptive statistical analysis of the closed-ended questionnaire items and thematic analysis of the open-ended responses. The quantitative findings provide an overview of participants' perspectives on mindfulness-based approaches to teaching and classroom management, while the qualitative findings offer further insight into their understanding, perceived benefits, possible applications, anticipated challenges, and suggestions for teacher education. Both sets of findings are considered together to develop an integrated understanding of the participants' perspectives. The discussion also relates the findings to relevant literature on mindfulness in education and teacher development, taking into account the exploratory nature of the study, the characteristics of the sample, and the limitations of the research instrument. As the study examined participants' reported perspectives rather than the outcomes of an implemented mindfulness intervention, the findings are interpreted in terms of perceived relevance and potential applications rather than the demonstrated effectiveness of mindfulness-based approaches.

3.1. Demographic and Contextual Profile of Participants

Table 1 presents the demographic, academic, and teaching-related characteristics of the 44 B.Ed.

undergraduate student teachers who participated in the study. The profile includes participants' age groups, year of study, teaching status, and prior awareness of mindfulness. These characteristics provide contextual information for understanding the participants' perspectives on mindfulness-based approaches to teaching and classroom management.

Regarding age, the majority of participants were above 26 years of age ($n = 35$, 79.5%). Six participants (13.6%) were aged 24–26 years, while two (4.5%) belonged to the 21–23 age group. Only one participant (2.3%) was aged 18–20 years. This distribution indicates that the sample predominantly consisted of older undergraduate student teachers. However, age alone does not establish an individual's level of teaching experience, professional competence, or familiarity with mindfulness. Therefore, the age distribution is considered a descriptive characteristic of the sample rather than evidence of differences in participants' perspectives across age groups.

In terms of academic progression, participants represented all four years of the B.Ed. undergraduate programme. Year 1 students formed the largest group, comprising 22 participants (50.0%). This was followed by Year 4 students, with 11 participants (25.0%), and Year 3 students, with eight participants (18.2%). Year 2 students accounted for the smallest group, with three participants (6.8%). Although the inclusion of students from all four academic years provided perspectives from different stages of undergraduate study, the distribution was uneven. In particular, the substantial representation of Year 1 students should be considered when interpreting the overall findings, as the perspectives of this group may be more strongly reflected in the results than those of students in other academic years.

The participants' teaching status provides further insight into their professional backgrounds. Of the 44 participants, 35 (79.5%) were in-service teachers who were already employed as teachers while pursuing their B.Ed. degree. The remaining nine participants (20.5%) were pre-service student teachers undertaking a three-month teaching practice placement in government schools as part of their degree programme. Thus, the sample included

both practising teachers with ongoing professional responsibilities and student teachers gaining classroom experience through supervised school-based practice. This distinction is relevant because participants could draw on their respective teaching contexts when considering the potential relevance of mindfulness-based approaches to teaching and classroom management. Nevertheless, the study examined the perspectives of the participating group as a whole and was not designed to establish statistically significant differences between the two teaching-status groups.

Prior awareness of mindfulness was also examined to understand participants' reported familiarity with the concept. The results show that 37 participants (84.1%) reported having prior awareness of mindfulness, whereas seven (15.9%) reported no prior awareness. This suggests that most participants were familiar with the concept before responding to the questionnaire. However, prior awareness does not necessarily indicate a detailed theoretical understanding of mindfulness, regular engagement in mindfulness practices, or the ability to apply such practices in teaching. The findings should therefore be interpreted as participants' self-reported awareness rather than evidence of their practical competence or depth of knowledge.

Taken together, the participant profile shows that the sample predominantly consisted of individuals above 26 years of age, included student teachers

from all four academic years, and was mainly composed of in-service teachers. In addition, most participants reported prior awareness of mindfulness. These characteristics provide a useful context for interpreting the subsequent quantitative findings and qualitative themes concerning participants' perspectives on the relevance, perceived benefits, and possible applications of mindfulness-based approaches in teaching and classroom management.

However, these findings should be interpreted in light of the study's sampling approach and the characteristics of the sample. Participants were selected through convenience sampling from an external B.Ed. degree programme at a single state university in Sri Lanka. Consequently, the sample was not intended to represent all B.Ed. undergraduate student teachers in Sri Lanka. The uneven distribution across age groups and academic years also limits comparisons between these categories. Furthermore, the questionnaire did not establish how participants had become aware of mindfulness or whether they had previously practised it. Accordingly, Table 1 provides a descriptive profile of the participating student teachers and a contextual basis for interpreting their perspectives, rather than evidence of relationships between demographic characteristics and their views on mindfulness.

Table 1: Demographic and Academic Profile of Participants (N = 44)

Variable	Category	Frequency (n)	Percentage (%)
Age Group	18–20 years	1	2.3%
	21–23 years	2	4.5%
	24–26 years	6	13.6%
	Above 26 years	35	79.5%
Year of Study	Year 1	22	50.0%
	Year 2	3	6.8%
	Year 3	8	18.2%
	Year 4	11	25.0%
Teaching Status	In-service teachers (currently employed)	35	79.5%
	Pre-service student teachers (undertaking a three-month school teaching practice)	9	20.5%

Prior Awareness of Mindfulness	Yes	37	84.1%
	No	7	15.9%

Source: Survey Data (2026)

3.2. Quantitative Perspective of Mindfulness and Teacher Effectiveness

Table 2 presents the quantitative findings regarding the perspectives of the 44 B.Ed. undergraduate student teachers on mindfulness in education. The statements focused on participants' understanding of mindfulness, its perceived importance for teachers' professional development, and its potential relevance to emotional regulation, classroom management, communication, and teacher well-being. The findings are summarised using the combined percentages of participants who selected *Agree* or *Strongly Agree*, the combined percentages who selected *Disagree* or *Strongly Disagree*, and the mean scores calculated on a five-point Likert scale. Overall, the findings indicate that participants expressed favourable perspectives on the potential relevance of mindfulness to teaching and classroom management, although the level of agreement varied across the statements.

Regarding their understanding of mindfulness, 86.4% of participants agreed or strongly agreed that they understood the concept, while 6.8% disagreed or strongly disagreed. The mean score of 4.30 indicates a generally favourable assessment of their understanding. This finding can be considered alongside the demographic results presented in Table 1, where 84.1% of participants reported prior awareness of mindfulness. However, prior awareness and self-reported understanding do not necessarily indicate comprehensive theoretical knowledge or the ability to practise mindfulness effectively. As the study relied on questionnaire responses, the findings reflect participants' reported understanding rather than objectively assessed knowledge. Nevertheless, the results suggest that most participants considered mindfulness a concept with which they were familiar.

The importance of mindfulness as a teacher quality also received favourable responses. A

total of 86.4% of participants agreed or strongly agreed that mindfulness was an important quality for teachers, while 6.8% disagreed or strongly disagreed. The mean score was 4.48. This finding suggests that most participants recognised the potential relevance of mindfulness to the personal and professional qualities required in teaching. Teaching involves interacting with students, responding to different classroom situations, and making decisions under varying circumstances. From the participants' perspectives, mindfulness may be relevant to approaching such responsibilities with greater awareness and consideration. However, the questionnaire findings do not establish that mindfulness directly improves teachers' performance; rather, they indicate that participants viewed mindfulness as an important quality for the teaching profession.

The highest mean score was recorded for the statement that mindfulness improves teachers' professional skills. A total of 97.7% of participants agreed or strongly agreed with this statement, while 2.3% disagreed or strongly disagreed. The mean score was 4.59. This result indicates that participants expressed particularly favourable perspectives on the potential contribution of mindfulness to professional development. Their responses may reflect an understanding that effective teaching involves more than subject knowledge and instructional techniques; it also requires awareness of classroom situations, thoughtful decision-making, and appropriate responses to interpersonal challenges. Nevertheless, the statement concerns participants' views about the contribution of mindfulness to professional skills, rather than measured improvements in those skills. Therefore, the result should be interpreted as strong support for the perceived relevance of mindfulness to teachers' professional development, not as evidence that mindfulness practice actually improved their professional skills.

Participants also expressed favourable perspectives on the potential role of mindfulness in helping teachers remain calm in difficult situations. For this statement, 90.9% agreed or strongly agreed, whereas 4.6% disagreed or strongly disagreed. The mean score was 4.45. This response pattern suggests that most participants considered mindfulness relevant to maintaining calmness when facing challenging classroom circumstances. Teachers may encounter situations involving disruptive behaviour, misunderstandings, competing classroom demands, or unexpected changes during lessons. In such circumstances, remaining calm may help teachers consider their responses rather than react immediately. The findings therefore highlight the perceived relevance of mindfulness to managing challenging teaching situations. However, because the study did not observe classroom behaviour or implement a mindfulness intervention, it cannot establish whether mindfulness practice enables teachers to remain calmer in difficult situations.

A related finding emerged for the statement that mindfulness encourages thinking before reacting. A total of 90.9% of participants agreed or strongly agreed, while 2.3% disagreed or strongly disagreed. The mean score was 4.55, the second-highest mean recorded in the table, alongside the statement concerning respectful communication with students. This finding suggests that participants particularly valued the potential role of mindfulness in encouraging thoughtful responses rather than immediate reactions. In classroom management, a teacher's response to student behaviour may influence subsequent interactions and the classroom atmosphere. From this perspective, taking time to consider a situation before responding may be regarded as a useful professional approach. Participants' responses indicate that they viewed mindfulness as potentially supporting this approach. Nevertheless, the findings do not demonstrate that mindfulness changed their actual decision-making or behavioural responses in classroom settings.

The findings concerning emotional management were similarly favourable. A total of 88.6% of

participants agreed or strongly agreed that mindfulness supports emotional management, while 4.6% disagreed or strongly disagreed. The mean score was 4.50. This result suggests that most participants considered mindfulness relevant to managing emotions in teaching contexts. Teaching can involve emotionally demanding interactions, particularly when teachers respond to student difficulties, behavioural challenges, or unexpected classroom events. The ability to recognise and manage emotional responses may therefore be considered relevant to maintaining professional interactions. The participants' responses suggest that they viewed mindfulness as a potentially useful approach in this respect. However, the questionnaire did not directly measure emotional regulation or establish whether participants' emotional management abilities differed according to their awareness or practice of mindfulness.

Participants also expressed favourable perspectives on the potential relationship between mindfulness and respectful communication with students. A total of 90.9% agreed or strongly agreed that mindfulness promotes respectful student communication, while 6.8% disagreed or strongly disagreed. The mean score was 4.55. This was one of the highest mean scores in the table, suggesting that participants regarded respectful communication as an area in which mindfulness could be relevant. Communication in teaching requires teachers to listen to students, explain expectations clearly, and respond appropriately to questions or behavioural difficulties. A mindful approach may be viewed as encouraging greater attention to interactions and more considered responses. The findings suggest that participants associated mindfulness with the interpersonal aspects of teaching, rather than viewing it solely in relation to personal calmness. Nevertheless, the study did not directly assess teacher-student communication, and the result should therefore be understood as participants' views of the potential relationship between mindfulness and respectful communication.

Regarding classroom management, 90.9% of participants agreed or strongly agreed that mindfulness helps teachers manage student behaviour effectively. The proportion who disagreed or strongly disagreed was 4.5%, and the mean score was 4.36. Although the percentage of agreement was high, the mean score was lower than those recorded for professional skills, thinking before reacting, emotional management, and respectful communication. This suggests that participants generally viewed mindfulness favourably in relation to student behaviour management, although their mean rating was comparatively lower than for several other statements. Classroom management involves interconnected responsibilities, including establishing expectations, maintaining student engagement, responding to disruptive behaviour, and adapting strategies to different classroom circumstances. Mindfulness may be viewed as one approach that supports teachers' awareness and responses within these processes; however, it should not be considered a replacement for pedagogical knowledge, clear classroom rules, or appropriate behaviour-management strategies. Since the study did not measure actual student behaviour or classroom outcomes, the findings indicate participants' perspectives on the potential relevance of mindfulness rather than demonstrated effectiveness in managing student behaviour.

The statement concerning the reduction of teacher stress also received favourable responses. A total of 90.9% of participants agreed or strongly agreed that mindfulness reduces teacher stress, while 4.6% disagreed or strongly disagreed. The mean score was 4.43. This finding suggests that participants viewed mindfulness as potentially relevant to teachers' well-being. Teaching responsibilities can involve lesson preparation, assessment, classroom management, communication, and other professional demands. Participants may therefore have considered mindfulness a possible approach to responding to stress-related challenges. Nevertheless, the study did not measure participants' stress levels or compare stress before and after mindfulness practice. Consequently, the findings cannot

confirm that mindfulness reduced stress among the participants. Instead, they indicate that most participants believed mindfulness could have a role in supporting teacher well-being.

Finally, 95.5% of participants agreed or strongly agreed with the statement that mindfulness makes them more effective teachers. Only 4.5% disagreed or strongly disagreed, and the mean score was 4.45. The high percentage of agreement indicates that most participants viewed mindfulness as relevant to their own professional development and perceived teaching effectiveness. This finding complements their responses concerning professional skills, emotional management, calmness, and respectful communication. Taken together, these responses suggest that participants considered mindfulness potentially relevant to several dimensions of teaching. However, the statement reflects participants' own assessments rather than an objective evaluation of teaching performance. The study did not include classroom observations, student achievement data, or other independent measures of teacher effectiveness. Accordingly, the result should not be interpreted as evidence that mindfulness had already made participants more effective teachers.

Overall, the quantitative findings show favourable perspectives on mindfulness across all ten statements. The highest mean score was recorded for the perceived contribution of mindfulness to teachers' professional skills ($M = 4.59$), followed by thinking before reacting and respectful communication with students (both $M = 4.55$). Emotional management received a mean score of 4.50, while the perceived importance of mindfulness as a teacher quality received a mean of 4.48. The statements concerning remaining calm in difficult situations and perceived teaching effectiveness both recorded means of 4.45. The mean score for reducing teacher stress was 4.43, while student behaviour management recorded 4.36. Understanding of the mindfulness concept received the lowest mean score ($M = 4.30$), although the result still indicated a generally favourable response pattern.

These findings suggest that participants expressed particularly favourable perspectives on the potential relevance of mindfulness to professional skills, thoughtful responses, and respectful communication. They also viewed mindfulness positively in relation to emotional management, classroom management, teacher well-being, and their own perceived teaching effectiveness. However, the differences between mean scores should be interpreted descriptively rather than as statistically significant differences, because the study used descriptive analysis and did not conduct inferential statistical tests. Furthermore, the combined agreement and disagreement percentages do not include participants who selected the neutral response. Therefore, the two percentages are not expected to total 100% for each statement.

Although the quantitative results provide an overview of participants' perspectives, they do not fully explain why participants held these views, how they understood mindfulness in practice, or what challenges they anticipated in applying it to teaching and classroom management. The qualitative findings from the open-ended questionnaire responses are therefore important for exploring participants' explanations, perceived applications, concerns, and suggestions in greater depth. Integrating these qualitative insights with the quantitative findings can provide a more comprehensive understanding of how the participating B.Ed. undergraduate student teachers viewed the role of mindfulness in their professional contexts.

Table 2: Participants' Perspective of Mindfulness in Education (N = 44)

Likert Statement	Agree / Strongly Agree (%)	Disagree / Strongly Disagree (%)	Mean (out of 5)
Understanding of mindfulness concept	86.4%	6.8%	4.30
Mindfulness is an important quality for teachers	86.4%	6.8%	4.48
Mindfulness improves teacher professional skills	97.7%	2.3%	4.59
Mindfulness helps teachers stay calm in difficult situations	90.9%	4.6%	4.45
Mindfulness encourages thinking before reacting	90.9%	2.3%	4.55
Mindfulness supports emotional management	88.6%	4.6%	4.50
Mindfulness promotes respectful student communication	90.9%	6.8%	4.55
Mindfulness manages student behaviour effectively	90.9%	4.5%	4.36
Mindfulness reduces teacher stress	90.9%	4.6%	4.43
Mindfulness makes me a more effective teacher	95.5%	4.5%	4.45

Source: Primary Survey Data (2026)

3.3. Qualitative Synthesis and Thematic Discussion

The qualitative findings provided deeper insights into how the participating B.Ed. undergraduate student teachers understood mindfulness and considered its possible applications in teaching and classroom management. While the quantitative findings presented in Table 2

indicated generally favourable perspectives on the relevance of mindfulness to teachers' professional skills, emotional management, communication, and classroom management, the open-ended responses offered further context regarding the meanings participants associated with mindfulness, the practical strategies they considered appropriate for educational settings, the potential benefits they anticipated, and the

challenges that might influence its implementation. The qualitative synthesis was organised around four interconnected themes: mindfulness as a teacher disposition, pedagogical applications of mindfulness, the perceived relevance of mindfulness to classroom management, and barriers to implementation. Together, these themes highlight that participants' understanding of mindfulness extended beyond formal meditation and included its possible integration into everyday teaching practices and professional interactions.

The first theme, *mindfulness as a teacher disposition*, reflected participants' understanding of mindfulness as a form of internal awareness, present-moment attention, emotional composure, and empathetic understanding. Rather than associating mindfulness exclusively with silent meditation or a separate activity conducted before a lesson, participants viewed it as potentially relevant to how teachers think, feel, communicate, and respond to classroom situations. This perspective suggests that mindfulness may be understood as a professional disposition that influences teachers' awareness of their own emotions and reactions while remaining attentive to students' needs and classroom circumstances. In teaching, such awareness may be particularly relevant when teachers encounter unexpected behaviour, disagreements, learning difficulties, or emotionally demanding interactions. From this standpoint, mindfulness could encourage teachers to recognise their immediate reactions and consider more thoughtful responses before acting. This interpretation also corresponds with the quantitative finding that 90.9% of participants agreed or strongly agreed that mindfulness encourages thinking before reacting, with a mean score of 4.55. Similarly, the high level of agreement concerning emotional management (88.6%; $M = 4.50$) provides quantitative context for the importance participants attached to emotional awareness and composure. Nevertheless, these findings represent participants' understandings and perspectives rather than direct evidence that mindfulness

improved their emotional regulation or professional behaviour.

The second theme, *pedagogical applications of mindfulness*, concerned the practical strategies participants considered suitable for introducing mindfulness into teaching. The responses highlighted short, accessible activities such as one- to two-minute breathing exercises, silent reflection, gentle stretching, and grounding breaks. These activities were viewed as potentially adaptable to both face-to-face and online teaching contexts. Their brief duration may make them more practical for teachers who must balance classroom activities with syllabus coverage, lesson objectives, and time constraints. For example, a teacher might begin a lesson with a brief breathing activity or a quiet moment of reflection to encourage students to settle their attention before introducing the main lesson content. Similarly, a short grounding activity during an online lesson could provide an opportunity for students to pause and refocus. Such practices could be presented as optional, inclusive classroom routines rather than religious rituals, making them potentially suitable for students from different religious and cultural backgrounds. However, their appropriateness would depend on the age, preferences, comfort, and needs of the students, as well as the teaching context. Teachers would also need to ensure that participation remained respectful and non-coercive. The emphasis on short and practical activities therefore suggests that participants considered flexibility and ease of implementation important when integrating mindfulness into educational practice. At the same time, the qualitative findings do not establish that these activities were systematically implemented or that they produced measurable improvements in students' attention, emotional well-being, or learning outcomes.

The third theme, *the perceived relevance of mindfulness to classroom management*, highlighted participants' views on how mindfulness might support a more considered and less confrontational approach to managing classroom situations. The responses suggested

that mindfulness could help teachers move from immediate, reactive responses towards more reflective and proactive approaches when addressing student behaviour. Rather than responding to every difficulty through immediate correction or confrontation, teachers may be able to pause, consider the circumstances, and select responses that maintain professional respect while addressing classroom expectations. Such an approach may be particularly relevant in language classrooms, where students may experience anxiety when speaking in front of others, making mistakes, or participating in unfamiliar learning activities. A calm and respectful teacher response may help create a classroom atmosphere in which students feel more comfortable participating and communicating. This theme is consistent with the quantitative findings, in which 90.9% of participants agreed or strongly agreed that mindfulness promotes respectful communication with students ($M = 4.55$), while the same proportion considered it relevant to managing student behaviour effectively ($M = 4.36$). The findings also showed that 90.9% agreed or strongly agreed that mindfulness helps teachers remain calm in difficult situations ($M = 4.45$). Considered together, these results indicate that participants viewed mindfulness as potentially relevant to teachers' interpersonal responses and classroom management practices. Nevertheless, mindfulness should be understood as a possible complement to established classroom management strategies, rather than a substitute for clear expectations, appropriate disciplinary procedures, sound pedagogical decisions, or responses to serious behavioural concerns. Furthermore, although participants associated mindfulness with the possibility of reducing anxiety among language learners, the present study did not directly measure student anxiety or evaluate changes in student behaviour. These points should therefore be interpreted as participants' views about potential applications rather than the outcomes demonstrated.

The fourth theme, *barriers to the implementation of mindfulness*, drew attention to practical and contextual factors that could influence the

integration of mindfulness into teaching. The challenges identified included pressure to complete the syllabus within limited time, large class sizes, insufficient structured teacher training, and initial hesitation among students. Time constraints may discourage teachers from incorporating additional activities when they are expected to complete prescribed content within a fixed period. Similarly, large classes may make it difficult to facilitate activities that require individual attention, quiet reflection, or careful monitoring of students' participation. A lack of structured training may also limit teachers' confidence in selecting suitable practices, explaining their purpose, adapting them to different age groups, and responding appropriately when students feel uncomfortable. In addition, some students may initially be reluctant to participate because they are unfamiliar with mindfulness activities or uncertain about their purpose. These challenges indicate that positive perspectives alone may not be sufficient to support the effective integration of mindfulness into classroom practice. Teachers may require practical guidance, appropriate training opportunities, and context-sensitive resources that allow them to adapt activities to their classroom environments. Short activities that require minimal equipment and preparation may be more feasible in time-constrained settings, while clear explanations and voluntary participation may help address initial hesitation. However, such approaches would need to be explored further to determine their suitability across different educational contexts in Sri Lanka. The identified barriers also suggest that teacher education programmes could consider introducing mindfulness as part of broader discussions of classroom management, professional awareness, emotional regulation, and respectful communication, while avoiding the assumption that a single approach will suit every teacher or student.

Taken together, the four themes provide a more detailed understanding of the participating B.Ed. undergraduate student teachers' perspectives on mindfulness in education. Mindfulness was

understood not merely as a formal meditative activity but also as a potential teacher disposition associated with awareness, composure, and thoughtful responses. Participants identified brief classroom activities as possible ways of incorporating mindfulness into face-to-face and online teaching, while also recognising its potential relevance to respectful communication and non-confrontational classroom management. At the same time, the discussion of implementation barriers highlighted the influence of institutional demands, classroom conditions, training opportunities, and student readiness on the practical use of such approaches. These qualitative insights complement the quantitative findings in Table 2 by helping to explain the areas in which participants expressed favourable perspectives and by identifying practical considerations that may shape the application of mindfulness in teaching. Nevertheless, the findings should be interpreted within the exploratory scope of the study. The qualitative responses represent the views reported by the participating student teachers and do not independently establish the effectiveness of mindfulness practices. Further research involving classroom observations, practical implementation, and a wider range of teacher education contexts could examine how these perspectives relate to actual teaching practices and the experiences of students in Sri Lankan classrooms.

4. Conclusion

This study explored B.Ed. undergraduate student teachers' perspectives on mindfulness in teaching and classroom management in Sri Lanka. Using a convergent parallel mixed-methods design, the study examined participants' views on the relevance of mindfulness to teachers' professional development, emotional regulation, interpersonal communication, and classroom management. The quantitative findings indicated generally positive perspectives on the potential value of mindfulness in educational settings. The highest mean score ($M = 4.59$) was recorded for the statement that mindfulness improves teachers' professional skills, followed by emotional management ($M = 4.50$) and overall teaching effectiveness ($M =$

4.45). Furthermore, 90.9% of participants agreed or strongly agreed that mindfulness helps teachers remain calm in difficult situations, think before reacting, and promote respectful communication with students. These findings suggest that participants regarded mindfulness as a potentially valuable quality for reflective, emotionally aware, and responsive teaching.

The qualitative findings provided additional insights into participants' perspectives through four themes: mindfulness as a teacher disposition, practical pedagogical applications, perceived relevance to classroom management, and barriers to implementation. Participants' responses highlighted awareness, emotional composure, empathy, and thoughtful responses to challenging classroom situations as important aspects of mindfulness in teaching. Short breathing exercises, silent reflection, gentle stretching, and grounding activities were identified as possible approaches for incorporating mindfulness into face-to-face and online classrooms. Participants also associated mindfulness with a less reactive and more considerate approach to classroom management. However, these findings represent participants' perspectives and suggested applications; they do not establish that mindfulness directly improves classroom behaviour, reduces student anxiety, or increases teaching effectiveness.

Based on these findings, teacher education institutions in Sri Lanka could consider incorporating introductory mindfulness-related content into Bachelor of Education curricula and continuing professional development programmes. Training could focus on self-awareness, emotional regulation, reflective decision-making, patient communication, and constructive responses to challenging classroom situations. Brief, practical activities could be explored as possible strategies that can be adapted to different teaching environments. Such activities should be introduced in culturally sensitive and inclusive ways, with clear explanations and consideration of individual preferences. Teacher education programmes should also consider the implementation challenges identified in the

qualitative findings, including syllabus completion pressures, large class sizes, limited structured training, and initial student hesitation.

Several limitations should be considered when interpreting the findings. The study involved 44 B.Ed. undergraduate student teachers recruited through convenience sampling from an external degree programme at one state university in Sri Lanka. Although the sample included both in-service teachers and pre-service student teachers undertaking school teaching practice, it cannot be considered representative of all B.Ed. undergraduate student teachers in Sri Lanka. The study also relied on self-reported questionnaire data and descriptive statistical analysis. As the researcher-developed questionnaire had not undergone formal validation or pilot testing, the findings should be interpreted cautiously. Furthermore, the study did not include a mindfulness intervention, classroom observations, a comparison group, or pre- and post-intervention measurements. Therefore, it cannot establish causal relationships or determine the actual effectiveness of mindfulness in teaching and classroom management.

Future research could address these limitations by involving larger and more diverse samples from multiple teacher education institutions and universities in Sri Lanka. Further studies could use interviews, focus group discussions, classroom observations, and appropriately reviewed research instruments to obtain a deeper understanding of how student teachers understand and apply mindfulness in educational settings. Intervention-based studies could also investigate the feasibility and potential outcomes of short mindfulness activities in different classroom contexts. Overall, this study offers preliminary empirical insights into B.Ed. undergraduate student teachers' perspectives on mindfulness and highlights its perceived relevance to professional preparation and classroom management. The findings provide a basis for further research and informed consideration of mindfulness within teacher education, while recognising that additional evidence is needed before conclusions can be drawn about its effectiveness.

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Assessing the Effectiveness of UN SDGs Amid Geopolitical Volatility: A Panel Study of 166 Countries, 2019–2025

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Adopted in 2015 with a 2030 horizon, the Sustainable Development Goals (SDGs) established a universal, voluntary and indicator-driven framework for coordinated global action. Since 2019, however, a sequence of shocks the pandemic, energy and food crises, sovereign-debt distress and deepening geopolitical fragmentation has tested whether this form of soft governance can protect progress in a crisis. This study evaluates SDG effectiveness as shock resilience rather than as proximity to the 2030 targets. Using a balanced panel of 166 countries observed annually from 2019 to 2025 (1,162 country-year observations), it combines the SDG Index with the Geopolitical Risk (GPR) Index, armed-conflict intensity, supply-chain and growth-volatility indicators, governance indicators, and financing flows. The empirical strategy comprises two-way fixed-effects regression with country-clustered standard errors and an event-study design around the shock years 2020 and 2022. The results indicate that (a) global average SDG Index scores have plateaued at roughly 66–67 since 2019, after rising in 2015–2019; (b) higher geopolitical risk is associated with slower annual SDG (c) the association is stronger in fragile and conflict-affected states; and (d) it is weaker where governance quality and financing are stronger. The findings suggest that the SDG architecture functions as a coordination and accountability mechanism in stable periods, but carries much of the responsibility for safeguarding progress in a crisis without the enforcement or financial instruments to do so. Limitations include the status of the estimates, the associational (not strictly causal) design, the composite nature of the SDG Index, and an unusually shock-prone sample window. The study proposes adaptive, polycentric and shock-resilient design principles for sustainability governance beyond 2030.

Keywords: Sustainable development goals, Sustainability governance, Geopolitical risk, Systemic disruption, Shock resilience, Panel data analysis

1. Introduction

The 2030 Agenda for Sustainable Development, adopted in 2015, is one of the most ambitious global governance experiments to date: a single universal agenda of 17 Sustainable Development Goals (SDGs) and 169 targets intended to guide all nations toward shared social, economic and environmental objectives. Unlike the Millennium Development Goals, the SDGs apply to rich and poor countries alike.

The agenda rests on voluntary commitments, peer review and accountability through data rather than on treaty obligations. This “governance through goals” model deliberately replaced legal enforcement with transparency, reporting and reputational pressure, on the expectation that these would encourage convergence. In its early years the wager appeared sound, as composite SDG performance rose, albeit unevenly, in most regions.

Since 2019, however, the architecture has faced an unprecedented test. Systemic shocks have accumulated in a short period: the COVID-19 pandemic and its economic fallout, the war in Ukraine with its energy and grain price shocks, accelerating climate extremes, a fracturing of the multilateral order into competing geopolitical blocs, and sovereign-debt distress across the Global South. These are not sectoral problems but parallel, cross-border shocks that travel simultaneously through trade, finance, food and energy systems. According to UN assessments, only a small minority of targets are on track and the financing gap has widened (United Nations, 2023). The central question is therefore no longer only whether the world will meet the SDGs, which it evidently will not, but whether the governance architecture itself can defend development gains when the geopolitical and systemic environment turns hostile.

The question matters theoretically and practically. The SDGs are a form of soft governance that steers through

indicators and networks rather than compliance and redistribution. If such an architecture works only in calm and well-resourced conditions, its design is fragile precisely when it is most needed. As the 2030 deadline approaches and discussion turns to what follows, evidence on the durability and limits of the architecture is needed to judge whether it can deliver resilience rather than hope.

Relevance to education and psychology

The present study operates at the country level and does not measure psychological constructs. Its relevance to the education and psychology fields is threefold. First, SDG 4 (Quality Education) is among the goals affected by crisis; pandemic-era evidence shows declines in education outcomes alongside health and poverty outcomes (Filho et al., 2023), and the SDG 4 sub-score is therefore analysed as an additional outcome in the robustness analysis (Table 8). Second, the moderators examined here (governance capacity and predictable financing) are the institutional conditions under which education systems can sustain learning through crises. Third, the country-level evidence provides a macro-level baseline for future micro-level research on the behavioural and psychological dimensions of resilience, which lie beyond the scope of this paper (see Section 5).

Existing empirical work on the SDGs tends either to pre-date the most severe shock years or to describe progress by goal, cataloguing what advances and what does not, without explicitly identifying the contribution of geopolitical and systemic shocks (Allen et al., 2021; Filho et al., 2023). To the authors’ knowledge, few quantitative studies model the link between geopolitical volatility, as captured by the GPR Index or armed-conflict intensity, and the pace of SDG progress at country level across a wide sample of countries over the disruption window (Section 2 and Table 1). This study addresses that gap.

Research questions and objectives

The study addresses three research questions:

- **RQ1.** How did the pattern of global and regional SDG progress change before and after 2019?
- **RQ2.** Is geopolitical volatility, together with wider systemic disruption, associated with the annual rate of change in countries' SDG Index scores, and is the association stronger in fragile and conflict-affected states?
- **RQ3.** Do governance quality and financing stability moderate the association between geopolitical volatility and SDG progress?

Correspondingly, the objectives are: (1) to document changes in SDG performance before and after 2019; (2) to estimate the association between volatility and the annual change in SDG Index scores using two-way fixed-effects regression on a balanced panel of 166 countries for 2019–2025; and (3) to examine whether institutional quality and stable financing buffer adverse effects. The hypotheses are that geopolitical volatility is associated with slower SDG progress (H1); that this association is stronger in fragile and conflict-affected states (H2); and that governance quality and financing stability weaken it (H3).

The study contributes in three ways. Conceptually, it redefines SDG “effectiveness” as the capacity of the architecture to withstand shocks and protect progress already made, which is more appropriate to a volatile period than distance to the 2030 targets. Empirically, it integrates geopolitical-risk and disruption measures with SDG Index trends in a single panel framework across the disruption window. In terms of policy, it draws out design implications for a post-2030 framework that is polycentric, shock-buffered and adaptive. The remainder of the paper reviews the literature and develops the framework (Section 2),

describes data and methods (Section 3), presents and discusses the results (Section 4), and concludes (Section 5).

2. Review of Literature and Conceptual Framework

2.1 Four strands of literature

The first strand concerns the political impact of the SDGs. The most extensive synthesis to date finds that the political effects of the goals are mainly discursive: they change how actors talk about development, but do not necessarily alter resource allocation or institutional behaviour (Biermann et al., 2022). The governance-through-goals model was designed from the outset as a soft one, whose success depends heavily on favourable political and fiscal conditions, and the same authors warn against “cherry-picking”, whereby states select easier targets and neglect harder or more contested ones (Forestier & Kim, 2020). Kotzé et al. (2022) similarly find limited steering effects of the goals in the domain of planetary integrity.

The second strand concerns measurement and progress pathways. The annual Sustainable Development Report, which produces the SDG Index, shows a turning point: scores rose steadily until 2019, then stalled, and some indicators reversed, notably those related to poverty, hunger and decent work (Sachs et al., 2024; Lafortune et al., 2024). Analyses of the internal structure of the goal system show that progress is highly uneven, that assumed synergies are not always realised, and that trade-offs between economic and environmental goals sharpen under fiscal stress (Allen et al., 2021). Implementation also requires structural change that voluntary coordination is unlikely to supply (Bali Swain & Yang-Wallentin, 2020).

The third strand concerns political economy and crisis. Critical scholarship questions the depoliticisation of the SDGs, which treats essentially political questions of power and distribution as technical problems solvable through measurement (Fukuda-Parr & McNeill, 2019).

Since 2020 this critique has gained empirical weight: studies of the pandemic era report broad declines in health, education and poverty outcomes, largest in low-income and fragile countries (Filho et al., 2023). In parallel, the geopolitical-risk literature has developed tools to measure volatility.

The Geopolitical Risk (GPR) Index uses textual analysis of newspapers to build a continuous, comparable measure of geopolitical tension, and has been shown to predict reductions in investment, trade and cross-border cooperation (Caldara & Iacoviello, 2022). The connection between such measures and development outcomes remains largely unexplored.

The fourth strand concerns governance architecture and reform. Institutions organised along separate sectoral lines are poorly equipped for cascading, interconnected shocks, and more integrated and adaptive arrangements have been advocated (Biermann et al., 2022). The multi-level, networked nature of the SDGs may be a strength if it is better resourced and coordinated, since overlapping decision-making centres can add redundancy and resilience.

2.2 Research gap

Table 1 summarises how each strand relates to the present question. Across strands, the literature has theorised the soft-governance logic of the SDGs, documented uneven and stalled progress, and produced credible measures of geopolitical volatility. It has not, however, integrated these elements in one empirical model that estimates the association between volatility and the pace of SDG progress across a wide sample of countries over the implementation window while testing the moderating roles of governance and financing.

Table 1

Summary of Existing Strands and the Remaining Gap

Strand	Representative sources	Typical design	Limitation for present question
	Biermann et al. (2022); Forestier & Kim (2020); Kotzé et al. (2022)	Literature synthesis; goal-prioritisation analysis	No quantification of outcomes during the shock period
Measurement and progress	Sachs et al. (2024); Lafortune et al. (2024); Allen et al. (2021); Bali Swain & Yang-Wallentin (2020)	Index-based description; pathway and interaction analysis	Shocks not modelled as explanatory variables
Political economy and crisis	Fukuda-Parr & McNeill (2019); Filho et al. (2023)	Critical analysis; single-shock (pandemic) assessment	Single shock; no moderators tested
Geopolitical risk	Caldara & Iacoviello (2022)	Index construction; economic outcomes	Not linked to SDG outcomes

Note. Characterisations summarise the cited sources' principal focus and are not exhaustive.

2.3 Theoretical framework and hypotheses

The framework draws on the governance-through-goals perspective (Biermann et al., 2022), which views the SDGs as a steering mechanism that operates through norms, indicators and reputational pressure rather than binding obligations or fiscal transfers. Two implications follow for shock conditions. First, because the mechanism has no enforcement or redistribution instrument of its own, soft accountability

is expected to be less effective when external pressures intensify and governments' attention and resources are diverted. This expectation is a theoretical proposition, not an established empirical finding, and the study tests it (H1). Second, if the architecture depends on an enabling environment, its effects should be conditional on country capacity: states with weak institutions and unstable finance, including fragile and conflict-affected states, should be more exposed (H2), and strong governance and predictable financing should act as buffers that convert soft commitments into protected progress (H3).

This is consistent with the critique that the framework under-addresses distribution and power (Fukuda-Parr & McNeill, 2019). Figure 1 presents the resulting research model.

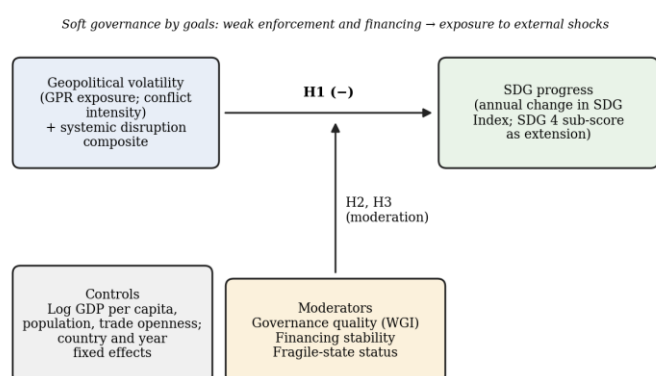


Figure 1. Research model and hypotheses.

3. Research Methodology

The study adopts a quantitative, longitudinal design using secondary panel data. The unit of analysis is the country-year. The estimation sample is a balanced panel of 166 countries observed over seven years (2019–2025), giving 1,162 country-year observations.

Countries with incomplete coverage on the dependent or principal independent variables were excluded to preserve balance.

3.1 Data sources and variable construction

Table 2 defines each variable and its source. Three points on data vintage and construction are noted explicitly. First, the annual change in the SDG Index (Δ SDG) for 2019 requires the 2018 score; the 2018 values are therefore used as the baseline year, which is why Δ SDG is available for all seven years and the full panel contains $166 \times 7 = 1,162$ observations (the one-year lagged specification loses the first year, giving $166 \times 6 = 996$ observations).

Second, SDG Index scores are not strictly comparable across report editions because indicators and methodology are revised. All scores are therefore drawn from a single harmonised time series from the most recent edition available at the time of analysis (Sachs et al., 2025), and the exact edition and download date will be reported.

The 2025 edition introduced a streamlined headline index (SDGi) based on 17 indicators, and results using the headline index are reported as a robustness check. Third, the GPR Index is published at country level only for a limited set of economies; for the full sample, country-level exposure is constructed by weighting the global GPR Index by each country's pre-2019 trade-to-GDP ratio (2015–2018 average), complemented by UCDP conflict intensity.

Table 2
Variable Definitions and Sources

Variable	Construction	Source
SDG Index; Δ SDG	SDG Index (0–100); Δ SDG = $SDG(t) - SDG(t-1)$, with 2018 as baseline	SDSN Sustainable Development Report (Sachs et al., 2024, 2025)

Geopolitical risk (GPR)	Country-level exposure = global GPR(t) × country's 2015–2018 mean trade-to-GDP ratio; standardised	Caldara & Iacoviello (2022)
Conflict intensity	$\ln(1 + \text{battle-related deaths})$	UCDP
Systemic disruption composite	Equal-weighted mean of z-scores of (i) global supply-chain pressure index, weighted as GPR exposure above, and (ii) real GDP growth volatility (SD over years $t-2$ to t); principal-component weights tested in robustness	Global Supply Chain Pressure Index; World Bank
Governance quality	Mean of z-scores of Government Effectiveness and Rule of Law	World Governance Indicators (WGI)
Financing stability	$-1 \times$ coefficient of variation of net ODA plus remittance inflows (% of GDP) over a rolling three-year window ($t-2$ to t); higher values indicate more stable financing	World Bank; OECD
Fragile / conflict-affected status	Binary, fixed at 2019 classification (time-invariant; main effect absorbed by country fixed effects, interaction retained)	World Bank harmonised list of fragile and conflict-affected situations

Exposure group (event study)	High exposure = above the sample median of the 2015–2018 mean GPR exposure weight (83 countries); low exposure = at or below median (83 countries). Fixed before the shock years	Constructed
Controls	Log GDP per capita; log population; trade openness (% of GDP)	World Bank

Note. ODA = official development assistance; SD = standard deviation; UCDP = Uppsala Conflict Data Program.

3.2 Estimation strategy

The core specification is a two-way fixed-effects (TWFE) panel regression:

$$ASDG(it) = \alpha(i) + \lambda(t) + \beta_1 \cdot GPR(it) + \beta_2 \cdot DIS(it) + \beta_3 \cdot GOV(it) + \beta_4 \cdot FIN(it) + \beta_5 \cdot (GPR \times GOV)(it) + \beta_6 \cdot (GPR \times FIN)(it) + \beta_7 \cdot (GPR \times FRAG)(it) + \gamma'X(it) + \varepsilon(it),$$

where $\alpha(i)$ are country fixed effects absorbing time-invariant country characteristics, $\lambda(t)$ are year fixed effects capturing common global shocks, DIS is the systemic-disruption composite, GOV and FIN are governance quality and financing stability, FRAG is fragile-state status, and X contains the controls. Continuous predictors are standardised so that coefficients are interpreted per standard deviation. Standard errors are clustered by country to address heteroskedasticity and serial correlation. H1 is tested through β_1 , H2 through β_7 , and H3 through β_5 and β_6 . A lagged specification (predictors at $t-1$) is estimated to mitigate reverse causality.

The panel regression is complemented by an event-study (difference-in-differences) design around the shock years 2020 and 2022, comparing high- and low-exposure countries (defined in Table 2) over 2017–2025 ($166 \times 9 = 1,494$ country-years), with pre-trend tests on 2017–2019 to assess the parallel-trends assumption. Robustness checks (Table 8) comprise alternative volatility measures, exclusion of influential observations, one-year lagged predictors, a random-effects specification with a Hausman-type test (a cluster-robust or Mundlak variant, since the classical Hausman test is invalid with clustered errors) to justify the fixed-effects choice, alternative weights for the disruption composite, exclusion of OECD countries to examine ceiling effects, the SDG 4 sub-score as an alternative outcome, and the 2025 headline SDGi. Analysis is conducted in R and Stata, and significance is reported at the .10, .05 and .01 levels.

3.3 Ethical and validity considerations

All data are publicly available, so no human-subjects approval was required. The use of established, peer-reviewed indices supports construct validity; country and year fixed effects and lagged specifications support internal validity; and the multi-country, multi-year design supports external validity within the disruption window of 2019–2025.

4. Analysis and Discussion

Interpretations are written in associational terms and will be revised if re-estimation changes the pattern.

4.1 Descriptive trends (RQ1)

The descriptive results indicate a marked loss of momentum. The global average SDG Index score rose from about 64.2 in 2015 to 66.5 in 2019, an average gain of roughly 0.6 points per year. From 2019 it moved within a narrow band of about 66.4 to 66.7 through 2023, with a dip in 2022 (the war and energy-shock year) and a modest recovery in 2024–2025, so

that average annual improvement across 2019–2025 was close to zero (about 0.07 points per year). As Table 3 shows, the stagnation is uneven. OECD countries remain at high scores and continue to edge upward, which points to a possible ceiling effect that is considered in Section 4.4, whereas Sub-Saharan Africa and fragile and conflict-affected states recorded absolute declines between 2019 and 2022 and remained at or below their 2019 levels in 2025.

Table 3

Mean SDG Index Score by Region and Year, 2019–2025

Region	2019	2020	2021	2022	2023	2024	2025
World (n = 166)	66.5	66.6	66.7	66.4	66.7	66.8	66.9
OECD	77.6	77.9	78.3	78.1	78.4	78.7	79.0
East & South Asia	65.7	65.9	66.2	65.8	66.1	66.4	66.6
Latin America & Caribbean	68.9	68.7	68.5	68.2	68.4	68.6	68.7
Middle East & North Africa	65.3	65.1	64.8	64.4	64.6	64.7	64.9
Sub-Saharan Africa	53.2	53.0	52.7	52.3	52.5	52.8	53.0
<i>Fragile & conflict-affected†</i>	50.8	50.4	49.9	49.2	49.4	49.6	49.8

Note. Scores are on a 0–100 scale, values anchored in published SDG Index trends (Sachs et al., 2024); to be replaced with values from the harmonised series of the 2025 edition (Sachs et al., 2025), stating the edition and download date. †Fragile and conflict-affected states overlap with the regional groups (principally Sub-Saharan Africa and the Middle East and North Africa) and are therefore not mutually exclusive with them; classification is the 2019 World Bank list.

4.2 Geopolitical volatility and SDG progress (H1)

The two-way fixed-effects estimates are consistent with H1. After controlling for country and year fixed effects and the control variables, a one-standard-deviation increase in the GPR measure is associated

with a lower annual change in the SDG Index of 0.78 points ($\beta = -0.78$, $SE = 0.21$, $p < .01$; Table 4, Model 2). The systemic-disruption composite also has a negative coefficient ($\beta = -0.41$, $SE = 0.16$, $p < .05$), which suggests that supply-chain pressure and growth volatility are associated with slower progress alongside geopolitical tension. Identification rests on differential country exposure after the common global shock has been absorbed by year fixed effects. The lagged specification (Model 3) yields coefficients of similar sign and size, which reduces, though does not eliminate concern about reverse causality.

Table 4

Two-Way Fixed-Effects Estimates of the Annual Change in SDG Index Score

Predictor	Model 1 (Base)	Model 2 (Full)	Model 3 (Lagged)
Geopolitical risk (GPR)	-0.84**	-0.78**	-0.69**
(SE)	(0.20)	(0.21)	(0.22)
Systemic disruption	—	-0.41*	-0.38*
(SE)		(0.16)	(0.17)
Governance quality	—	0.52**	0.49**
(SE)		(0.15)	(0.15)
Log GDP per capita	0.31*	0.27*	0.26*
Trade openness	0.09	0.07	0.06
Country fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Countries	166	166	166
Observations	1,162	1,162	996
Within R ²	[.21]	[.34]	[.31]

Note. Predictors are standardized; coefficients are interpreted per standard deviation. Cluster-robust standard errors (by country) in parentheses. Within R² is the share of variation in Δ SDG explained by the regressors after country and year effects are removed; it does not include the variance explained by the fixed effects themselves. Model 3 uses one-year lagged predictors, so the first year is lost ($166 \times 6 = 996$). $p < .05$. * $p < .01$.

4.3 Heterogeneity and moderation (H2, H3)

The interaction results are consistent with H2 and H3 (Table 5). The GPR $\times$ fragile-state interaction is negative ($\beta = -0.54$, $p < .05$), indicating a more pronounced association in fragile than in stable states. The GPR $\times$ governance-quality interaction is positive ($\beta = +0.36$, $p < .05$), as is the GPR $\times$ financing-stability interaction ($\beta = +0.29$, $p < .10$, which is only marginally significant). These patterns suggest that institutional capacity and predictable financing may act as shock absorbers. The predicted marginal effects of GPR across governance quartiles will be reported after re-estimation; the earlier draft's statement that high-governance countries retained 60–70% of expected annual gains has been removed because no table or figure supported it.

Table 5

Moderation Effects, Full Sample

Interaction	β	SE	Sig.	Countries	N
GPR $\times$ Fragile state (H2)	-0.54	0.24	$p < .05$	166	1,162
GPR $\times$ Governance quality (H3)	+0.36	0.16	$p < .05$	166	1,162
GPR $\times$ Financing stability (H3)	+0.29	0.17	$p < .10$	166	1,162

Note. Each row is from the full specification (Table 4, Model 2) augmented with the stated interaction and the corresponding main effect where it is not absorbed by fixed effects. Cluster-robust standard errors by country.

4.4 Event-study evidence

The event-study estimates are in line with these patterns (Table 6). Trends for high- and low-exposure countries were statistically parallel before 2020, which is consistent with the identifying assumption. Highly exposed countries experienced a downward shift in 2020 and 2022, with a cumulative estimated difference of about -1.6 SDG points by 2023 relative

to the pre-shock counterfactual, concentrated in hunger, health and partnership outcomes. Partial recovery in 2024–2025 suggests hysteresis: losses from shocks are not necessarily offset by the voluntary architecture once the shocks abate.

Table 6

Event-Study Estimates, High- versus Low-Exposure Countries

Estimand	β	SE	Sig.	Countries (high / low)	N
Cumulative effect by 2023	-1.60	0.48	p < .01	83 / 83	1,494
Pre-trend test (2017–2019)	0.04	0.11	n.s.	83 / 83	1,494

Note. The event-study effect is the difference between high- and low-exposure countries relative to the pre-shock counterfactual; the exposure groups are defined in Table 2. n.s. = not significant. Panel window 2017–2025 (166 × 9). Cluster-robust standard errors by country; degrees of freedom will be reported after re-estimation.

4.5 Robustness

The robustness checks described in Section 3.2 are specified in Table 7. Results will be reported after re-estimation; until then no robustness claim is made.

Table 7. *Robustness Checks (To Be Populated After Re-estimation)*

Check	Purpose	GPR coefficient (SE)
Alternative volatility measures (GPR only; UCDP only)	Sensitivity to measure choice	[]
Exclude influential observations	Outlier sensitivity	[]
One-year lagged predictors	Reverse causality	[]

Random effects; Mundlak/Hausman-type test	Justify fixed effects	[]
Principal-component weights for disruption composite	Composite weighting	[]
Exclude OECD countries	Ceiling effects	[]
SDG 4 sub-score as outcome	Education relevance	[]
2025 headline SDGi	Index methodology change	[]

4.6 Discussion

The results have theoretical implications that remain to be confirmed. They are consistent with the view of the SDGs as a soft, discursive steering mechanism whose effectiveness depends on an enabling environment (Biermann et al., 2022; Forestier & Kim, 2020). The architecture appears to work reasonably as a coordination and accountability mechanism in stable times, but it is not backed by enforcement or redistributive instruments that would protect gains during periods of heightened geopolitical risk and systemic shock. The stronger association in fragile states echoes criticism that the framework does not adequately politicise distribution or protect the most vulnerable (Fukuda-Parr & McNeill, 2019; Filho et al., 2023).

The moderating roles of governance and finance are consistent with arguments for capacity-based and more adaptive, polycentric reform (Biermann et al., 2022): resilience appears to be supplied less by the goal architecture itself than by national capacity and governance.

Ceiling effects. The plateau in OECD scores should be interpreted cautiously. Because the index is bounded and high-income countries start from high levels,

slower gains there may reflect diminishing returns rather than governance failure (OECD countries in Table 4 rise slowly even as scores plateau elsewhere). The exclusion of OECD countries in Table 8 is intended to test whether the main results depend on this group. Stagnation should be attributed to governance failure only where the evidence distinguishes it from ceiling effects.

Causal interpretation. Although fixed effects, lags and the event-study design strengthen the analysis, they do not establish causation. The statement that the architecture is a “receiver” of shocks, rather than protective against them, is an interpretation of the pattern of associations. It goes beyond what the identification strategy can demonstrate, since the study has no counterfactual in which the SDG architecture is absent.

4.7 Limitations

Several caveats apply. (i) The estimates are being re-estimated on verified data. (ii) The 2019–2025 window is unusually shock-prone and may overstate volatility effects relative to a normal period. (iii) The SDG Index is a composite of heterogeneous indicators that may mask within-country variation, and its methodology has changed across editions. (iv) Country-level GPR exposure is partly constructed, which introduces measurement error. (v) Despite lagging and fixed effects, unobserved confounders cannot be ruled out. (vi) The study uses country-level data and contains no individual-level educational or psychological measures.

5. Findings and Conclusion

This study examined the effectiveness of the UN SDG governance architecture under geopolitical uncertainty and systemic disruption, treating effectiveness as resilience to shocks. Three main conclusions emerge, subject to the caveat above. First, global SDG progress lost the momentum of 2015–2019 and has remained at

around 66–67 on average, with the annual rate of improvement falling from roughly 0.6 points to almost none. Second, geopolitical volatility is associated with slower SDG progress, and systemic disruption is associated with an additional independent penalty; the estimate is about 0.78 points per year per standard deviation of GPR. Third, the association is unequal: it is stronger in fragile and conflict-affected countries and weaker where institutions are stronger and funding more stable, which suggests that the architecture offers least protection where it is most needed.

Overall, the evidence suggests that the SDGs perform well as a coordinating, normative and accountability framework in stable conditions, but lack the enforcement and fiscal tools needed to protect development gains during compounding crises. Effectiveness is not an inherent property of the architecture; it depends on the surrounding institutional and financial conditions. The losses show signs of hysteresis that a voluntary coordination arrangement does not by itself reverse.

The implications for a post-2030 framework are clear. Sustainability governance should be redesigned to be adaptive, polycentric and shock-resilient: it should incorporate crisis-contingent financing facilities, treat national institutional capacity as a deliberate resilience investment, prioritise fragile states, and reinforce soft indicators with stronger accountability and predictable resourcing.

Future research should extend the panel beyond 2025 to test whether stagnation persists, disaggregate the effects by goal (including SDG 4), use sub-national data, and link macro-level evidence with micro-level studies of educational continuity and the psychological and behavioural dimensions of resilience.

Data and Code Availability

All variables are drawn from public sources (SDSN Sustainable Development Report; Geopolitical Risk Index; UCDP; World Governance Indicators; World Bank; OECD; Global Supply Chain Pressure Index). Replication data and R/Stata code will be deposited in a public repository [repository and DOI to be inserted] with the revised submission, including the exact data vintages and download dates.

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Structural Barriers to Women's Participation in Development Programmes in Sri Lanka: The Roles of Education, Labour Market Dynamics, Social Norms, Culture, Religion, Economic Power, and Institutional Change

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Abstract: Sri Lanka presents a development paradox: women constitute the majority of the population and demonstrate high educational attainment, yet their participation in paid employment, economic decision-making, political institutions and development programmes remains limited. In 2024, women represented 51.7% of the population. However, the female labour-force participation rate was only 32.4% in 2025, compared with 69.1% for men, highlighting the gap between educational achievement and economic inclusion. This article examines how social, cultural, economic, religious, legal, political, spatial, technological and institutional barriers shape women's participation in development programmes in Sri Lanka. It argues that meaningful participation extends beyond attendance or beneficiary status to include decision-making authority, access to information and resources, mobility, safety, leadership and influence over programme outcomes. The analysis considers how household norms, unpaid care responsibilities, labour-market structures, public services and institutional practices interact with disadvantages associated with poverty, rural residence, disability, age and other forms of social inequality. The article argues that Sri Lanka's central gender challenge is translating women's educational achievements into economic agency and decision-making power. It recommends gender-responsive programme design, accessible childcare, safe mobility, financial inclusion, flexible participation, effective grievance mechanisms, women's leadership and sex-disaggregated monitoring. These measures can strengthen gender equality, economic resilience, poverty reduction and the effectiveness of development investments.

Keywords: Women, Gender equality, Development Programmes, Social norms, Education

1. Introduction

Sri Lanka has long been recognised for comparatively strong human-development outcomes in South Asia. Universal access to education, high literacy, extensive public health provision and a long history of women's political participation have produced a social environment in which many conventional measures of gender disadvantage appear less severe than in neighbouring countries. Sri Lanka elected the world's first woman prime minister in 1960 and has subsequently had women in the highest levels of political office. The country also performs strongly in basic education: the 2024 population census reports a national language-literacy rate of 97.4%, with female literacy at 97.0% and male literacy at 97.9%. The World Bank's Gender Data Portal, using UNESCO data and a different definition, reports adult literacy in 2023 at 93.4% for women and 92.0% for men. These figures demonstrate that the historical gender gap in literacy has largely closed.

However, a high level of educational attainment should not be mistaken for equality of opportunity. The most persistent contradiction in Sri Lanka is the gap between women's human capital and their participation in economic and public life. According to the Department of Census and Statistics (DCS), the female labour-force participation rate was 32.4% in 2025, compared with 69.1% for men. Thus, fewer than one in three women aged 15 years and above were economically active, while approximately seven in ten men were. The female unemployment rate was also higher. The World Bank's ILO-modelled estimate places the 2025 female participation rate at around 31%, indicating that the precise level varies by statistical series, but the gender gap is unequivocally large.

The development implications are substantial. Development programmes increasingly depend on community participation, local institutions, livelihood improvement, infrastructure use, skills development, agricultural value chains, entrepreneurship, climate resilience, social

protection, digital services and local decision-making. If women are unable to attend meetings, travel safely to training, control household resources, access finance, speak in mixed-gender forums, participate in producer organisations, obtain technical employment or influence local decisions, a programme may be formally inclusive while remaining substantively gender unequal.

This distinction is especially important for programmes financed by multilateral development banks and other development partners. Contemporary development practice increasingly recognises that women must not merely be listed as beneficiaries. Gender-responsive programmes should address constraints that prevent women from exercising agency and benefiting equitably. The Asian Development Bank's current gender approach explicitly identifies discrimination, gender norms, restrictions on mobility, unpaid household responsibilities and exclusion from male-dominated sectors as barriers to women's participation. Similarly, World Bank research emphasises that successful women's empowerment programmes combine resources and opportunities with agency and changes in the enabling environment.

The central proposition of this article is therefore that women's participation in Sri Lankan development programmes is determined by an interconnected system of structural conditions. These conditions include household gender norms; expectations about appropriate female and male roles; unequal responsibility for unpaid care; limited access to safe and affordable transport; labour-market discrimination; occupational segregation; limited access to productive assets and finance; political exclusion; gender-based violence and harassment; digital inequalities; institutional practices; and, in some contexts, personal and customary laws. Religion itself should not be treated as a causal explanation or as a homogeneous barrier. Rather, religious institutions, interpretations, customary practices and community norms can interact with gender relations in ways that either constrain or support women's agency. A rigorous analysis must therefore distinguish faith

from the social and institutional practices conducted in its name.

The article addresses five principal questions, as follows;

1. What do current demographic, educational, labour and political indicators reveal about women's position in Sri Lanka?
2. What structural barriers prevent women from converting education and skills into participation and influence?
3. How do social, cultural, economic and religious factors interact rather than operate independently?
4. How do these barriers affect women's participation specifically in development programmes?
5. What reforms can make development programming more genuinely gender transformative?

2. Methodological and Conceptual Approach

This is a desk-based analytical article drawing primarily on official Sri Lankan statistics and recent publications of international development institutions. The principal statistical sources are the Department of Census and Statistics' Census of Population and Housing 2024, the Sri Lanka Labour Force Survey, the Economic Statistics of Sri Lanka 2026, and the 2024 Government School Census. International comparisons and gender indicators are drawn from UNESCO/UIS, the World Bank Gender Data Portal, the International Labour Organization, UN Women, UNFPA, the Inter-Parliamentary Union and the Asian Development Bank. Legal and socio-cultural issues are considered using recent scholarly and institutional literature.

The analysis uses a broad definition of participation. Participation includes at least six dimensions:

- (1) Presence or access
- (2) Voice and consultation
- (3) Influence over decisions
- (4) Access to resources and benefits
- (5) Leadership and representation
- (6) Sustained control over outcomes

This distinction matters because a woman can be physically present in a project meeting without being able to speak, influence decisions, control compensation or resources, or participate in implementation.

The conceptual framework combines gender-and-development thinking with an institutional and intersectional perspective. At the household level, gender norms determine the allocation of time, mobility and decision-making authority. At the market level, employment institutions determine whether education can be converted into paid work. At the community level, social expectations influence women's participation in organisations and public meetings. At the state level, laws, budgets, transport, childcare, social protection and political institutions determine the enabling environment. At the programme level, project design determines whether these structural constraints are recognised or ignored.

This approach also avoids a common methodological mistake: treating women as a homogeneous category. Women in Colombo do not necessarily face the same constraints as those in rural or estate communities. Young, unmarried women may encounter different mobility restrictions from married women with children. Women with disabilities may encounter accessibility barriers. Women in female-headed households may experience both greater economic responsibility and greater decision-making autonomy. Ethnic, linguistic and conflict-affected contexts can alter access to services and institutions. The objective is therefore not to claim that every Sri Lankan woman experiences every barrier, but to identify the structures that systematically increase the likelihood of exclusion.

3. Sri Lanka's Gender Profile: Strong Human Capital and Weak Economic Conversion

3.1 Demographic position

The 2024 Census of Population and Housing provides a crucial starting point. Sri Lanka's

population was 21,781,800, with females accounting for 51.7% and males 48.3%. In absolute terms, there were approximately 11.27 million females and 10.51 million males. The sex ratio was therefore about 93 males per 100 females. Females outnumbered males in every district.

This demographic reality has an important policy implication: women are not a small minority whose participation can be treated as a niche social issue. Women are a majority of the population and a majority in the adult population. Their underrepresentation in employment, leadership and programme decision-making therefore represents a major underutilisation of national human resources.

3.2 Education: the paradox of success

Education is one of Sri Lanka's strongest gender-equality achievements. The 2024 Government School Census recorded 3,816,234 students: 1,927,614 females and 1,888,620 males. Female students therefore represented approximately 50.5% of government-school enrolment. Female participation was not limited to primary education. The 2024 Census states that the percentage of females receiving school education was higher than that of males across all principal age groups.

The Census also reports a substantial improvement in higher educational attainment. Among people aged 25 and above, 26.2% reported tertiary education as their highest qualification in 2024, compared with 18.2% in 2012, and the increase was more pronounced among females. The World Bank Gender Data Portal, drawing on UNESCO, reports a 2023 tertiary gross enrolment rate of approximately 26% for females and a tertiary gender-parity index of about 1.4. In other words, women are not systematically excluded from tertiary education; in several measures they are more represented than men.

Literacy figures reinforce this picture. The 2024 Census records 97.0% female language literacy compared with 97.9% male literacy among persons aged 10 years and above. The World

Bank/UNESCO series reports 93.4% adult female literacy and 92.0% adult male literacy for 2023. The difference between the figures reflects different definitions and reference populations, not necessarily contradictory trends.

Yet educational success has not generated proportional economic participation. This is one of the most important findings for development policy. The problem is no longer simply getting girls into school. It is ensuring that educated women can move from education to employment, entrepreneurship, professional advancement, leadership and control over economic resources.

3.3 Labour-force participation

DCS Economic Statistics of Sri Lanka 2026 reports labour-force participation rates for 2025 of 49.4% overall, 69.1% for males and 32.4% for females. The female rate had been 31.8% in 2021, 32.1% in 2022, 31.3% in 2023 and 29.8% in 2024 before recovering to 32.4% in 2025. The male rate remained substantially higher throughout the period.

The gap cannot be explained by educational deficits alone. Indeed, Sri Lanka presents a classic case in which improvements in female education coexist with low female labour-force participation. The problem involves the transition from education into work and the retention of women in employment after marriage and childbirth.

Female unemployment also remains higher. In the fourth quarter of 2025, DCS reported unemployment of 5.7% for women compared with 2.7% for men. Among 15–24-year-olds, unemployment was 21.6% for females and 17.1% for males. These figures show that even among women who enter the labour market, access to suitable employment is more difficult.

3.4 Unpaid care work

The care economy provides one of the clearest explanations for the education-employment paradox. Sri Lanka's national Time Use Survey and subsequent ILO analysis show that women spend substantially more time on unpaid household and

care activities than men. A recent ILO background report states that women perform 86% of all unpaid work in Sri Lanka and that Sri Lankans spend an average of 3.7 hours per day on unpaid domestic and care work. ILO analysis also reports that women spend nearly two and a half times as many hours as men on housework.

Unpaid care is economically productive but statistically and socially undervalued. It includes childcare, eldercare, cooking, cleaning, collecting water or fuel where relevant, household management and support for dependent family members. When women undertake most of these tasks, participation in a training course, community meeting or livelihood activity has an opportunity cost. A two-hour meeting may require several additional hours of preparation, travel and substitute care.

Consequently, development programmes that schedule consultations during working or care hours, require repeated travel to district centres, or assume that beneficiaries can freely allocate time may unintentionally exclude women.

4. Social and Cultural Barriers

4.1 Gender norms and the gendered division of labour

Social norms are among the most persistent structural barriers. In many households, women remain primarily responsible for domestic work and care while men are socially positioned as income earners and public decision-makers. These expectations influence whether women are encouraged to work, travel, speak publicly, manage money, join producer organisations or hold leadership positions.

Norms can operate without explicit coercion. A woman may technically be free to attend a training session, but may nevertheless decide not to attend because she is expected to care for children or older relatives. A family may not formally prohibit employment, but may consider certain occupations inappropriate for women. A woman may have the

legal right to own land but still lack practical control over it because land is registered in a husband's or male relative's name.

World Bank and ADB research identifies restrictive gender norms and mobility constraints as significant contributors to low female labour-force participation in South Asia. World Bank analysis shows that marriage itself can create a substantial participation penalty for women in the region, even before children are born.

4.2 Marriage and the life-course effect

Women's participation is strongly shaped by the life course. The transition from school to higher education may be relatively gender-equal, while the transition from education to marriage and family formation can produce a sharp divergence. Marriage increases domestic responsibilities and can change women's perceived obligations, mobility and bargaining power.

This matters for development programmes because many interventions target women at precisely the stage when they are expected to undertake more unpaid care. Skills programmes may train young women but fail to provide employment pathways. Entrepreneurship programmes may offer training but not childcare, finance or market access. Agricultural projects may invite women to participate in farmer organisations but schedule activities at times that conflict with domestic responsibilities.

4.3 Mobility and safety

Mobility is both a physical and social issue. Women may have access to roads and public transport but still face constraints arising from cost, safety, harassment, family concerns or expectations about travelling alone. Poorly designed transport systems can therefore create gender exclusion even where infrastructure is technically available.

Safe mobility affects participation in vocational training, employment, markets, health services,

agricultural extension, project meetings and political institutions. The World Bank has identified mobility and safety as major supply-side barriers to women's labour-market participation in South Asia. ADB likewise highlights restrictions on mobility as an important gender constraint.

Development programmes should therefore treat transport and safety as participation infrastructure. The question is not simply whether a road, bus service or project facility exists; it is whether women can safely and affordably use it.

4.4 Gender stereotypes and occupational segregation

Women remain concentrated in sectors and occupations traditionally considered compatible with female roles, while men are more visible in construction, transport, technical trades, engineering and some agricultural and industrial activities. This occupational segregation reduces women's access to higher-paid jobs and leadership pathways.

ADB research on gender in the ICT/BPM sector in Sri Lanka has previously identified socio-cultural barriers, patriarchal expectations and gender stereotypes as factors discouraging women from entering and remaining in male-dominated fields. Similar mechanisms can operate in infrastructure, transport, construction, energy, agriculture and technology programmes.

If a development programme assumes that women will naturally choose traditionally female occupations, it can reinforce rather than challenge existing segregation.

5. Economic Barriers

5.1 The resource gap

Participation requires resources. Women need time, transport, working capital, land, equipment, information, digital connectivity and access to markets. Education alone cannot overcome the absence of these resources.

Financial inclusion has improved. The World Bank Gender Data Portal reports that in 2024, approximately 80.2% of Sri Lankan women aged 15 and above had an account with a financial institution or mobile-money provider, compared with 83.4% of men. This is comparatively high. However, account ownership should not be equated with economic autonomy. A woman may have a bank account but limited control over household savings, credit, collateral or investment decisions.

5.2 Land and productive assets

Land and property ownership influence bargaining power. Women with secure control over land or housing have greater ability to obtain credit, invest, withstand economic shocks and negotiate within households. Conversely, insecure tenure can limit participation in agricultural or livelihood programmes.

Sri Lanka's plural legal system includes general law and customary regimes, including Kandyan law, Thesavalamai and Muslim personal law. The interaction between statutory law, customary rules and social practice can affect women's property, inheritance and family rights. The issue should be approached carefully: customary and religious systems are not uniform, and their practical effects differ across communities and circumstances. Nevertheless, legal pluralism can create complexity for women seeking to understand and enforce rights.

5.3 Access to finance and entrepreneurship

Women entrepreneurs can face constraints in collateral, financial literacy, market networks, technology, business registration, procurement opportunities and confidence in dealing with institutions. Programmes that provide entrepreneurship training without addressing access to finance and markets may generate certificates rather than sustainable enterprises.

Development finance should therefore be designed around the full business ecosystem: finance,

mentoring, market access, digital tools, procurement, childcare, transport, networking and legal support.

5.4 Wage inequality and quality of employment

Participation rates alone do not capture the quality of work. Women may enter employment but remain concentrated in lower-paid, insecure or informal jobs. Historical ILO research on Sri Lanka has identified gender differences in wages and occupational outcomes. The existence of a gender pay gap reduces the expected return to education and can reinforce household decisions favouring men's employment.

For development programmes, this means that counting the number of women trained or employed is insufficient. Indicators should measure job quality, earnings, retention, promotion, social protection, occupational safety and decision-making.

6. Religious, Customary and Legal Dimensions

Religion requires careful treatment in gender analysis. Sri Lanka is religiously plural, and Buddhism, Hinduism, Islam and Christianity are all important components of the country's social fabric. Religious belief can provide ethical resources supporting dignity, social responsibility, education and women's wellbeing. Therefore, it would be analytically incorrect to describe religion itself as a barrier to women's participation.

The more precise issue is the interaction between religious interpretation, customary practice, family structures, community authority and gender norms. In some settings, interpretations of appropriate gender roles can influence women's mobility, work, leadership and family decision-making. These effects are not uniform and can vary by locality, socioeconomic status, education and individual family practice.

Sri Lanka's legal pluralism adds another layer. Muslim personal law governs marriage and divorce

for Muslims through the Muslim Marriage and Divorce Act, while other customary systems such as Kandyan law and Thesavalamai apply in defined circumstances. Scholarly and human-rights literature has raised concerns about gender equality within aspects of these frameworks. At the same time, reforms should be developed through inclusive dialogue with affected communities and with attention to constitutional equality, human rights and women's agency.

For development programming, the practical lesson is not to label religious communities as resistant to gender equality. Rather, programmes should undertake context-specific social analysis. They should identify who controls household decisions, who influences women's mobility, which community institutions women trust, what religious or customary authorities exist, and how women can safely participate.

Faith leaders and community leaders can become allies. Where they support girls' education, women's economic activity, prevention of violence and participation in public decision-making, they can help shift norms. Gender-responsive programmes should therefore engage progressive community and religious leaders without transferring decision-making authority away from women themselves.

7. Political and Institutional Barriers

7.1 Women's political representation

Women's demographic majority contrasts sharply with their political representation. The current Parliament has reached a historic high of approximately 22 women members, or about 9.8% of seats. Although this is an important improvement, it remains far below parity and below women's share of the population.

Sri Lanka's local-government system introduced a 25% quota for women. Experience shows, however, that quotas alone do not automatically produce substantive influence. UNFPA's 2025 brief on women's political participation concluded that legislation alone is insufficient and that structural,

institutional and social barriers continue to affect women's entry into political decision-making.

Political participation matters for development programmes because local elected representatives influence budgets, infrastructure priorities, service delivery and community development. When women are underrepresented, women's priorities can receive less institutional attention, particularly where gender-responsive planning systems are weak.

7.2 Participation in project governance

Development programmes frequently establish committees, community organisations, beneficiary groups, grievance mechanisms and stakeholder platforms. Women may be included nominally while decision-making remains dominated by men.

Common mechanisms of exclusion include:

- Meetings scheduled at inconvenient times;
- Lack of childcare;
- Male-dominated facilitation;
- Technical language that discourages participation;
- Insufficient notice;
- Reliance on household heads rather than individual women;
- Selection of male representatives for community committees;
- Failure to provide safe transport;
- Treating women as beneficiaries rather than decision-makers;
- Failure to establish confidential mechanisms for complaints.
- Meaningful participation therefore requires institutional redesign.

7.3 Gendered organisational cultures

Government agencies, contractors, consulting firms and development partners can themselves reproduce gender inequalities. Women may be underrepresented in technical positions, senior management and field-based roles. Gender specialists can be isolated from core technical

decision-making rather than integrated into programme management.

ADB's current gender framework emphasises moving toward more transformative approaches. This implies that gender cannot remain a specialist annex. It must be embedded in project management, procurement, budgets, monitoring, safeguards, stakeholder engagement and results frameworks.

8. Violence, Harassment and Safeguarding

Gender-based violence and sexual harassment constrain women's public and economic participation. Women who fear harassment on public transport, at workplaces, training centres or community meetings may avoid opportunities even when programmes are formally open to them.

Safeguarding is therefore not a peripheral compliance issue. It is central to participation. Development programmes should incorporate prevention and response mechanisms for sexual exploitation, abuse and harassment (SEAH), gender-based violence and workplace harassment. Codes of conduct, confidential reporting channels, survivor-centred referral systems, awareness training and clear accountability are essential.

The design of grievance redress mechanisms is especially important. A project grievance mechanism that requires women to complain publicly to a male committee member may technically exist but remain inaccessible. Women need multiple reporting channels, confidentiality and assurance that complaints will not result in retaliation.

9. Digital Information Barriers

Digitalisation creates opportunities but can also reproduce inequality. Women may have lower access to devices, digital skills, independent internet use or information about government and development programmes. Even where account ownership is high, the ability to use digital services independently is not guaranteed.

Digital exclusion affects access to e-government, online training, agricultural information, financial services, job platforms, markets and programme announcements. Development programmes that shift registration or communication entirely online risk excluding women with lower digital access.

Digital gender inclusion should therefore address affordability, device access, skills, language, safety and independent use. Digital platforms should complement rather than replace accessible community-based communication.

10. Intersectionality: (not all women face the same barriers)

A central weakness of generic gender programming is the assumption that "women" constitute one homogeneous beneficiary group. Structural barriers interact.

Poor rural women may experience transport and childcare constraints more severely than urban professional women. Estate women may face distinctive geographic and socioeconomic disadvantages. Women with disabilities may face physical accessibility barriers and stigma. Female-headed households may have greater economic responsibility but sometimes greater control over household decisions. Women in conflict-affected areas may experience displacement, documentation problems, livelihood insecurity and trauma. Older women may have different digital and mobility constraints. Young women may have high educational attainment but limited employment opportunities.

Language also matters. Development consultations that rely exclusively on one language can exclude women who are less comfortable participating in that language. Technical information should be provided in appropriate Sinhala and Tamil forms, with English used where necessary for technical communication.

Intersectional analysis therefore requires disaggregated data by sex and, where ethically and operationally appropriate, age, disability, location, socioeconomic status and other relevant characteristics.

11. How Structural Barriers Translate into Programme Exclusion

The structural barriers described above operate through a predictable chain. First, women may be excluded from information. Programme staff may communicate through male household heads, local political leaders or existing male-dominated organisations. Second, women may receive information but lack time to participate. Care responsibilities prevent attendance. Third, women may attend but have limited voice. Social norms discourage speaking in mixed-gender settings or challenging male leaders. Fourth, women may participate but lack control over resources. A grant, land title, compensation payment or productive asset may be formally allocated to a woman but controlled by another household member. Fifth, women may gain skills but lack market access. Training therefore fails to translate into employment or income. Sixth, women may obtain employment but face harassment, wage discrimination or unsafe transport and Seventh, women may enter leadership roles but remain isolated without institutional support.

This demonstrates why programme participation should be viewed as a continuum rather than a single indicator.

12. Implications for Development Programme Design

12.1 From participation numbers to meaningful participation

- The first reform is conceptual. Programmes should distinguish between:
- percentage of beneficiaries who are women;
- percentage of participants attending meetings;

- percentage of women who speak;
- percentage whose recommendations are adopted;
- percentage controlling project resources;
- percentage in leadership positions;
- percentage receiving income or assets;
- Percentage reporting that participation was safe and meaningful.
- This creates a hierarchy from presence to power.

12.2 Gender-responsive social analysis

Every major development programme should conduct gender and social analysis before finalising design. The analysis should identify gender division of labour, mobility constraints, care responsibilities, access to land and assets, access to finance, social norms, safety risks, barriers affecting women with disabilities, language and information barriers, women's organisations and trusted institutions, decision-making structures, risks of SEAH and gender-based violence. The analysis should lead directly to programme actions and budget allocations.

12.3 Care-sensitive programme scheduling

Care responsibilities should be treated as a design parameter. Practical measures include scheduling meetings outside peak care periods, providing childcare at training venues, supporting community-based childcare, allowing flexible participation, combining in-person and accessible remote options, reducing unnecessary travel; ensuring women are not penalised for care-related absence.

These measures are not "special treatment." They compensate for an unequal distribution of unpaid work.

12.4 Safe mobility

Projects should assess women's mobility during feasibility and design. This includes lighting, safe access routes, transport availability, gender-sensitive facilities, sanitation, waiting areas and

harassment risks. Where field activities require travel, transport arrangements should consider women's safety and affordability.

12.5 Women's leadership

Programmes should set meaningful targets for women's representation in project committees, beneficiary organisations, producer groups, training-of-trainers schemes and local decision-making bodies. However, quotas should be combined with leadership training, mentoring, confidence-building, meeting facilitation and institutional accountability.

12.6 Economic empowerment beyond training

Training should be linked to real economic opportunities. A programme supporting women entrepreneurs should provide a pathway from skills to finance, registration, procurement, technology, market access and business growth. Agricultural projects should examine women's control over land, inputs, extension services, production decisions and income.

12.7 Gender-responsive procurement and employment

Development projects spend significant resources through contractors and suppliers. Procurement requirements can promote women's employment, apprenticeships, safe workplaces, equal opportunity and prevention of harassment. Employment targets should focus on quality and retention, not only recruitment.

12.8 Stronger grievance mechanisms

Project GRMs should be designed for accessibility and confidentiality. Women should be able to submit complaints through multiple channels, including trusted female focal points where appropriate. Information about the GRM should be provided in local languages. Cases involving

violence, harassment or SEAH require specialised referral and confidentiality arrangements.

13. Monitoring and Evaluation Framework

A gender-responsive programme should establish indicators across four levels.

Input indicators: Including gender budget allocation, number of gender specialists/focal points, childcare and safe transport resources and safeguarding systems established.

Output indicators: Including women trained, women participating in committees, women receiving assets, finance or services and women attending consultations,

Outcome indicators: Including increase in women's income, increase in women's employment, increase in control over productive resources, increased participation in decision-making, reduction in reported mobility barriers and improved perceptions of safety.

Transformative indicators: Including changes in gender norms, redistribution of unpaid care, sustained women's leadership, institutional adoption of gender-responsive procedures, and reduction in occupational segregation and women's influence over project decisions.

Monitoring should include qualitative evidence. A project can achieve a 50% female participation target while women remain silent and men retain all decision-making power. Quantitative targets must therefore be supplemented by interviews, focus groups, outcome harvesting and beneficiary feedback.

14. Policy Recommendations

Sri Lanka should treat the low female labour-force participation rate as a national productivity issue rather than exclusively a women's issue. The economic opportunity cost of excluding educated women is substantial.

Childcare and care services should be expanded as economic infrastructure. Public, community and workplace-based care can reduce the unpaid care burden that restricts women's employment.

Safe and affordable transport should be integrated into gender policy. Mobility is a prerequisite for employment and programme participation.

Women's access to land, finance, technology and markets should be strengthened. Financial inclusion should move beyond account ownership toward meaningful control over productive finance.

Labour-market policies should support flexible work, safe workplaces, equal pay and re-entry after career interruptions.

Gender-responsive budgeting should be strengthened across national and subnational institutions. A gender budget is not simply a budget for women; it is a systematic assessment of how public expenditure affects women and men differently.

Women's political representation should be increased at national and subnational levels. Quotas can help, but they must be combined with institutional reforms, party-level commitments, leadership development and measures to reduce political harassment.

Legal pluralism should be reviewed from the perspective of equality, agency and human rights while respecting constitutional and community processes. Reform should be evidence-based and participatory.

Religious and community leaders should be engaged as partners in transforming restrictive social norms. Engagement should promote women's agency rather than substitute community authority for women's own decisions

Development partners should require sex-disaggregated indicators and gender-responsive risk

management in all major programmes. Gender should be incorporated into procurement, stakeholder engagement, safeguards, GRMs, monitoring and evaluation.

15. A Gender - Transformative Model for Sri Lankan Development Programmes

The evidence supports a shift from a "women as beneficiaries" model toward a "women as agents of development" model. The shift from a **"women as beneficiaries"** model to a **"women as agents of development"** model is increasingly important to Sri Lanka's current development process because women constitute more than half of the population and have achieved high levels of education, yet their participation in employment, economic decision-making, leadership and development planning remains comparatively limited. Treating women merely as recipients of project benefits can reinforce existing dependency and gender inequalities, whereas recognising women as active decision-makers, entrepreneurs, workers, leaders and community change agents enables development programmes to harness their knowledge, skills and capabilities. This requires moving beyond numerical targets for female participation toward meaningful voice, control over resources, leadership opportunities and influence over project decisions. Such a transformation is particularly relevant to Sri Lanka's economic recovery and inclusive-growth agenda, as greater women's economic and institutional participation can strengthen household resilience, productivity, poverty reduction and the overall sustainability of development investments.

The first pillar is Resources: (Education, finance, assets, technology, transport and services). The first pillar, access to and control over resources, is fundamental to the meaningful inclusion of women in Sri Lanka's development process. Resources such as education, finance, land and other productive assets, technology, transport, information, childcare, health and other essential services determine women's capacity to participate in economic activities, access employment opportunities, influence household and community

decisions, and benefit from development investments. Although Sri Lankan women have achieved relatively high levels of educational attainment, gaps in access to productive assets, affordable finance, digital technologies, safe and reliable transport, and supportive services can continue to constrain their participation, particularly among poor, rural and socially disadvantaged women. Therefore, development programmes should move beyond simply providing benefits to women and ensure that women have equitable access to, and greater control over, the resources and services required to exercise economic agency and participate effectively as active partners in development.

The second is Agency (Confidence, information, bargaining power, decision-making and control over resources). This refers to women's ability to make meaningful choices, exercise voice, influence decisions, and act upon those choices individually and collectively. In Sri Lanka, women's meaningful participation in development requires more than access to project benefits; it requires their active involvement in planning, implementation, monitoring and decision-making at household, community, institutional and policy levels. Development programmes should therefore create opportunities for women to participate in consultations, community organisations, producer groups, livelihood activities and leadership structures, while strengthening their confidence, skills, access to information and ability to influence decisions. Strengthening women's agency is particularly important for ensuring that development interventions respond to women's priorities and that women become active decision-makers, leaders and agents of change rather than passive recipients of development assistance.

The third is enabling institutions (laws, policies, childcare, labour standards, safe transport, social protection and responsive public services). The third pillar, enabling institutions, recognises that women's meaningful inclusion in development depends on an institutional environment that protects their rights, reduces practical barriers and

provides appropriate support throughout their life cycle. In Sri Lanka, gender-responsive laws and policies, adequate childcare and care services, decent labour standards, safe and accessible transport, social protection, health and education services, and responsive public institutions are essential for enabling women to participate fully in employment, entrepreneurship, community activities and development programmes. Such institutions can reduce the constraints arising from unpaid care responsibilities, unsafe mobility, discrimination, economic insecurity and limited access to public services. Development programmes should therefore strengthen institutional accountability and ensure that public services and project systems are accessible, safe, inclusive and responsive to women's different needs, particularly those of low-income, rural and socially disadvantaged women. Ultimately, enabling institutions provide the structural conditions that allow women to convert access to resources and agency into sustained and meaningful participation in development.

The fourth pillar is social norms (changing expectations about men's and women's roles, unpaid care and women's leadership). Social norms recognise that women's inclusion in development is strongly influenced by prevailing expectations about the roles and responsibilities of women and men within households, communities, workplaces and institutions.

In Sri Lanka, traditional perceptions that women should bear primary responsibility for unpaid domestic and care work, while men are expected to be the primary earners and decision-makers, can restrict women's mobility, employment opportunities, economic participation, and involvement in leadership roles. Changing these expectations is therefore essential to enable women to participate more equally in development programmes. This requires promoting shared household and care responsibilities, greater acceptance of women's employment and entrepreneurship, women's participation in community and institutional decision-making, and recognition of women as leaders and agents of development. Transforming restrictive social norms

can help ensure that improvements in resources, agency and institutional support translate into sustained and meaningful participation by women in Sri Lanka's development process.

The fifth is accountability (measurable targets, gender-responsive budgets, grievance systems, safeguarding and institutional responsibility). The fifth pillar, accountability, is critical to ensuring that commitments to women's inclusion in development in Sri Lanka are translated into concrete and measurable results.

Development programmes should establish measurable gender targets, gender-responsive budgets, accessible grievance redress mechanisms, and effective safeguarding systems and clearly defined institutional responsibilities to ensure that gender commitments are implemented and monitored throughout the project cycle. Accountability should go beyond counting the number of women participating and assess whether women have meaningful influence in decision-making, equitable access to resources, leadership opportunities, protection from discrimination and harassment, and tangible improvements in their livelihoods and wellbeing.

Regular gender-disaggregated monitoring, transparent reporting and timely corrective action can strengthen the responsibility of government institutions, implementing agencies and development partners. In this way, accountability ensures that the other four pillars resources, agencies, enabling institutions and positive social norms result in sustained and meaningful inclusion of women in Sri Lanka's development process.

These pillars are mutually reinforcing. A woman who receives vocational training but has no childcare or safe transport may not enter employment. A woman who receives finance but lacks control over household decisions may not be able to invest it. A woman who is elected to a committee but cannot speak may not influence the project. A woman who is economically active but faces harassment may leave employment.

Transformative programming therefore requires multiple interventions operating together.

Table.1 Selected current gender indicators

Indicator	Female	Male
Population, 2024	51.7%	48.3%
Government-school students, 2024	1,927,614 (50.5%)	1,888,620 (49.5%)
Labour-force participation rate, 2025	32.4%	69.1%
Unemployment rate, Q4 2025	5.7%	2.7%
Adult literacy rate, 2023	92.0%	93.4%
Language literacy rate, 2024 (age 10+)	97.0%	97.9%
Tertiary education gender parity index, 2023	1.40 female-to-male ratio	—
Bank account ownership, 2024 (age 15+)	80.2%	83.4%
Parliamentary representation, 2026	9.8%	90.2%

Sources: Department of Census and Statistics, Census of Population and Housing 2024; Ministry of Education, Annual School Census 2024; Department of Census and Statistics, Labour Force Survey 2025; World Bank/UNESCO literacy data; World Bank Global Findex 2025 (2024 observations); UNESCO tertiary education indicator data; and Inter-Parliamentary Union parliamentary data.

Statistics in this article use the latest official or internationally harmonised figures located during the September 2026 evidence review. Where figures differ because definitions or reference years differ, the article identifies the source and does not treat the series as interchangeable.

16. Sector-Specific Implications for Development Programming

The structural barriers become particularly visible when development programmes are examined by sector. In agriculture, women frequently contribute substantially to production and post-harvest activities but may be recorded administratively as spouses or household members rather than as farmers in their own right. This can affect access to extension, inputs, credit, producer organisations and market information. Agricultural programmes should therefore identify women individually as economic actors and collect sex-disaggregated data on land access, production, income and decision-making. Where women do not hold land titles, programmes should consider alternative mechanisms for

ensuring access to inputs, finance and training rather than assuming that land ownership is a prerequisite for participation.

In infrastructure programmes, the gender question extends beyond whether women are consulted about a road, water system, irrigation scheme or public facility. Women often experience infrastructure differently because they combine paid and unpaid work and may have different mobility patterns. Water and sanitation investments can reduce domestic workloads; transport can increase access to employment and markets; safe lighting can improve mobility after dark; and accessible public facilities can reduce safety and dignity risks. Infrastructure projects should therefore assess gendered use patterns and not simply measure the number of women attending consultation meetings.

In skills and employment programmes, the central problem is the transition from training to decent work. Women may successfully complete training but encounter barriers when seeking employment in male-dominated sectors, travelling to

workplaces, managing childcare or negotiating wages. Programmes should therefore track employment placement, retention, earnings and promotion, not merely training completion. Employer engagement is essential because demand-side discrimination can negate supply-side investment in skills.

In digital and innovation programmes, women should be included in technology design, digital-skills training, entrepreneurship ecosystems and online employment. Digital services should be designed for varying levels of literacy, language proficiency, disability and digital confidence. Where women share devices with other household members, privacy and independent access become important. Cyber harassment and technology-facilitated gender-based violence should also be incorporated into safeguarding assessments.

In climate adaptation and disaster-risk programmes, women's participation is particularly important because women may have distinctive knowledge of household water, food security, care, health and local coping strategies. However, women can be excluded from formal disaster committees or land and infrastructure decisions. Climate programmes should therefore integrate women into risk assessment, preparedness, early-warning communication, livelihood diversification and recovery planning. Female-headed households and women in vulnerable livelihoods require particular attention.

In health and social protection programmes, women can be both service users and unpaid care providers. A health programme that increases access to services but does not reduce women's care burden may leave the underlying constraint unchanged. Social protection systems should also recognise informal and unpaid work and consider how benefit design affects women's control over income. The objective should be to strengthen women's agency rather than simply directing benefits to women without adequate control mechanisms.

17. From Gender Mainstreaming To Gender Transformation

Gender mainstreaming has been an important policy achievement, but implementation often becomes procedural. A project may include a gender action plan, a gender specialist, a few female participation indicators and a statement of commitment to equality while leaving the underlying power relations untouched. A transformative approach asks a different set of questions: Who controls resources? Who decides? Who carries the unpaid work? Who is considered technically competent? Who is safe to speak? Whose knowledge counts? What changes in household and institutional behaviour are expected?

A gender-transformative programme therefore seeks changes in structures and relationships as well as improvements in individual women's access. It can combine practical measures such as childcare, transport, training and finance with strategic measures such as leadership, norm change, institutional reform and accountability. This distinction is especially important in Sri Lanka because many basic gender outcomes are already relatively strong. If programme objectives remain focused only on access, they may repeatedly invest in problems that are no longer the principal constraint. Girls already have high school participation; the policy question is how education translates into economic and political agency. Women increasingly have bank accounts; the question is whether they control finance and productive investment. Women participate in community organisations; the question is whether they influence decisions. A transformative framework therefore targets the conversion of human capital into power and opportunity.

Social norm interventions should also be evidence-based. Rather than assuming that communities are uniformly conservative, programmes should identify the specific norms affecting the intervention. For example, the relevant norm may be that mothers should not

travel for work, that men should control major financial decisions, that technical occupations are unsuitable for women, or that public leadership is incompatible with family responsibilities. Each requires a different intervention. Community dialogue, male engagement, role models, media, school curricula and engagement with employers and local leaders can complement direct services to women.

18. A Proposed Analytical Model and Hypotheses for Doctoral Research

For future empirical research, the article proposes a five-level model of women's participation in development programmes. Level one is structural opportunity, consisting of laws, public services, infrastructure, labour-market conditions and social protection. Level two is household capability, consisting of time, income, mobility, care arrangements and bargaining power. Level three is individual capability, consisting of education, skills, information, digital literacy, confidence and health. Level four is programme accessibility, consisting of meeting arrangements, information channels, childcare, transport, safety, language and grievance systems. Level five is substantive influence, consisting of voice, leadership, control over resources and changes in wellbeing.

The model implies that programme participation is not determined by individual motivation alone. A highly educated woman can still be unable to participate when household care responsibilities, unsafe transport or programme scheduling create high participation costs. Conversely, relatively modest interventions such as childcare, safe transport or flexible scheduling can substantially increase participation where skills and motivation already exist.

The model generates several hypotheses suitable for quantitative and mixed-methods testing.

H1: Women with greater control over household income and productive assets are more likely to participate actively in development programme decision-making.

H2: Higher unpaid care responsibilities are negatively associated with participation frequency and leadership.

H3: Perceived safety and transport accessibility are positively associated with women's participation in training, employment and community meetings.

H4: The effect of education on programme participation is mediated by labour-market access, household bargaining power and programme accessibility.

H5: Women's participation targets have stronger effects on substantive influence when accompanied by childcare, leadership development and institutional accountability.

H6: Gender-transformative interventions that engage men, employers and institutions produce more sustained changes than interventions directed solely at women.

A mixed-methods design would be particularly appropriate. Household surveys could measure participation, time use, assets, mobility, employment and decision-making. Programme-level administrative data could measure attendance and outcomes. Qualitative interviews could examine why women do or do not participate. Focus groups could explore social norms, safety and perceptions of leadership. Process tracing could identify how specific programme interventions change participation over time. Such research would move the discussion from descriptive gender statistics toward causal explanations of programme effectiveness.

19. Practical Implementation Matrix for Development Agencies

A practical gender-responsive implementation matrix can translate the analysis into programme management.

At the design stage, agencies should complete gender and social analysis, establish a sex-disaggregated baseline, identify barriers by subgroup, assess SEAH and GBV risks, map

women's organisations and determine whether programme benefits require land, collateral, mobility or household consent. The design should then specify actions, responsible institutions, budgets and measurable outcomes.

At the implementation stage, programme managers should monitor female participation monthly or quarterly, review whether women are attending at the intended rate, assess whether they speak and influence decisions, and investigate drop-out patterns. If women leave training or committees at higher rates than men, the project should treat this as a diagnostic signal rather than as individual non-compliance.

At the supervision stage, development partners should ask gender-specific questions during missions:

- Are women receiving benefits?
- Are benefits controlled by women?
- Are consultations meaningful?
- Are women safe?
- Has unpaid care increased or decreased?
- Are women moving into higher-value occupations?
- Are female-led enterprises surviving?
- Are women represented in grievance committees?
- Are project contractors meeting workplace standards?

At the completion stage, evaluation should examine sustainability.

- Did women's income increase?
- Did household decision-making change?
- Did women retain assets?
- Did institutions adopt permanent gender-responsive practices?
- Did women's leadership continue after the project ended?

These questions distinguish temporary participation from lasting empowerment.

The matrix should also identify institutional responsibility. Gender outcomes cannot be assigned exclusively to a gender specialist. Project

directors, engineers, procurement staff, safeguards specialists, financial officers, contractors, local authorities and monitoring teams all influence women's participation. Gender accountability must therefore be distributed across the project management system while retaining a clear focal point for coordination.

20. Limitation and Research Agenda

Several limitations should be acknowledged. First, the most recent indicators are not always from the same reference year. Population and school data are available from the 2024 Census and school census, while labour-force statistics extend to 2025 and internationally modelled indicators may use different reference years. These indicators should therefore not be treated as a single synchronized dataset.

Second, participation in development programmes is not routinely captured in national statistics. Labour-force participation and education indicators provide important contextual evidence but do not directly measure women's participation in every development intervention. Programme-specific administrative data and evaluations are needed to establish direct causal relationships.

Third, the categories of social, cultural and religious barriers are analytically interconnected. A restriction described as cultural may actually reflect household economics, safety, labour-market discrimination or institutional practice. Future research should avoid attributing outcomes to religion or culture without examining the specific mechanism involved.

Fourth, national averages conceal substantial geographic and socioeconomic variation. Future research should compare provinces, districts, rural and urban settings, estate communities, conflict-affected areas and different income groups. Intersectional research is particularly important for women with disabilities, female-headed households, migrant families and women working in informal employment.

Finally, more research is needed on what actually works. Sri Lanka has accumulated many gender policies and programmes, but systematic comparative evaluations of childcare, safe transport, women's leadership quotas, entrepreneurship finance, digital inclusion and social-norm interventions remain valuable. A doctoral research programme could therefore move beyond documenting barriers and estimate the relative effectiveness and cost-effectiveness of different interventions.

21. Discussion

Sri Lanka's experience challenges a simplistic linear model of development in which education automatically leads to empowerment. Education is necessary but not sufficient. The country has achieved near-universal basic literacy and strong female school participation, yet the labour-market gender gap remains large. This demonstrates that the constraints on women's participation increasingly lie outside the education system.

The evidence also challenges the assumption that economic growth automatically resolves gender inequality. Sri Lanka's historical development achievements have not eliminated unpaid care burdens, occupational segregation or political underrepresentation. Economic structures and social institutions interact.

The role of culture should also be understood dynamically. Culture is not a fixed obstacle. Social norms can change, and they have changed substantially in Sri Lanka. The rapid expansion of women's education itself transformed expectations about girls and professional roles. The same process can be applied to care work, leadership, technical employment and entrepreneurship.

Religion similarly should not be treated as a single explanatory variable. Religious communities contain diverse interpretations and practices. Some religious and community leaders may reinforce traditional gender roles, while others can

become influential advocates for girls' education, women's economic activity and prevention of violence. Development programming should therefore move from stereotyping communities toward evidence-based social analysis.

The political dimension is equally important. Women cannot achieve full participation if decisions about public investment are overwhelmingly made by men. The increase to around 10% female representation in Parliament is a positive development, but the distance to parity remains large. Political representation should therefore be understood as an enabling condition for gender-responsive development.

Finally, the current economic context increases the urgency of women's participation. Sri Lanka's recovery from its recent economic crisis requires productivity, employment creation, entrepreneurship and resilience. Excluding or underutilising more than half the population is economically inefficient. Gender equality should therefore be positioned not only as a rights objective but as a central development strategy.

22. Conclusion

Sri Lanka demonstrates that impressive progress in education does not automatically produce equality in employment, economic power or decision-making. Women are 51.7% of the population; female students slightly outnumber male students in government schools; female literacy is almost equal to male literacy; and women have made important gains in tertiary education. Yet the female labour-force participation rate was only 32.4% in 2025 compared with 69.1% for men, and women continue to be underrepresented in political and institutional leadership.

The explanation lies in a complex architecture of structural barriers. Social expectations allocate disproportionate unpaid care work to women. Cultural norms influence mobility and occupational choices. Economic institutions constrain access to assets, finance and quality

employment. Safety concerns and gender-based violence limit public participation. Legal and customary systems can create additional complexity. Political institutions remain male-dominated. Programme structures can unintentionally reinforce exclusion when they rely on male household heads, inconvenient meeting schedules, inadequate childcare, unsafe transport or weak grievance mechanisms.

The central policy conclusion is therefore clear: development programmes must move beyond counting women. Meaningful participation requires voice, influence, resources, safety, leadership and control over outcomes. Gender mainstreaming should not be reduced to a checklist or a numerical target. It should be integrated into project design, budgets, procurement, safeguards, stakeholder engagement, implementation and evaluation.

For Sri Lanka, the next stage of gender equality is not primarily about proving that girls and women can acquire education. The evidence already demonstrates that they can. The challenge is to remove the institutional and social barriers that prevent educated women from converting knowledge and skills into decent work, entrepreneurship, leadership, economic security and public influence.

The development opportunity is therefore substantial. If Sri Lanka can reduce unpaid care constraints, improve safe mobility, expand quality employment, strengthen women's control over assets and finance, increase political representation, prevent harassment and violence, and redesign development programmes around meaningful participation, women will not merely benefit from development. They will increasingly shape it. That shift from women as programme recipients to women as decision-makers and agents of change is essential for inclusive, resilient and sustainable development in Sri Lanka.

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Child Psychology in Teaching: A Comprehensive Literature Review of the Sri Lankan Context

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Abstract: This literature review examines the application of child psychology principles in teaching practices within Sri Lanka's educational system. It analyses peer-reviewed articles and academic publications to explore child development theories, classroom psychological practices, teacher-related challenges, professional training needs, preschool education, and sociocultural influences on children's learning and development. Relevant literature was identified through academic databases, including Google Scholar and ERIC, ResearchGate, journal websites, and institutional repositories, using keywords such as "child psychology," "child development," "teaching practices," and "Sri Lanka." The selected publications were analysed thematically to identify key findings and research gaps. The review indicates that child-centred pedagogy, behavioural approaches, and social-emotional learning are relevant to educational practice. However, challenges include potential gaps in pre-service and in-service teacher training, limited application of evidence-based psychological practices, corporal punishment, and difficulties identifying and addressing children's developmental needs. Further research is needed to examine teacher preparedness, the relationship between educational policy and classroom practice, and the influence of sociocultural contexts on children's learning and wellbeing. Strengthening child psychology education within teacher training and professional development may promote more inclusive, responsive, and developmentally appropriate teaching practices in Sri Lanka.

Keywords: Child Psychology, Teaching Practices, Child-Centred Pedagogy, Teacher Training, Child Development

1.1 Theoretical Frameworks of Child Development Relevant to Sri Lankan Education

The integration of child psychology into teaching is essential for effective education, especially in developing contexts with unique challenges and opportunities. In Sri Lanka, a country with near-universal primary enrollment and free education through tertiary levels, educators and policymakers increasingly focus on applying child psychology in classrooms. Understanding how children develop cognitively, emotionally, and socially, and using that knowledge to create developmentally appropriate learning environments, is key to improving student outcomes and well-being.

Sri Lanka's education system has clear strengths but also faces ongoing challenges. The country maintains high enrollment rates and free education at all levels (Alawattegama, 2020). However, issues remain around quality, equity, and adopting modern teaching methods that match children's developmental needs. Recent years have brought more attention to early childhood education, inclusive practices for children with special needs, and the importance of teachers' psychological skills (Caldera et al., 2023; Nastasi & Jayasena, 2014).

This literature review brings together research on child psychology in Sri Lankan teaching. It covers theoretical frameworks, psychological approaches used by educators, implementation challenges, teacher training and competencies, early childhood education practices, and socio-cultural factors that shape how child psychology is understood in Sri Lankan classrooms. The review draws from empirical studies, program evaluations, and theoretical analyses to offer evidence based recommendations for strengthening child psychology principles in Sri Lankan education.

2. Method of Data Analysis

The collected literature was analysed using thematic analysis. The selected studies were reviewed and grouped into key themes, including developmental theories, psychological approaches to teaching, early childhood education, inclusive education, teacher training, disciplinary practices, and socio-cultural influences on child development in Sri

Lanka. Findings across studies were compared to identify common patterns, differences, challenges, and gaps in existing research. Particular attention was given to teachers' knowledge of child psychology, the use of evidence-based teaching strategies, early identification of developmental difficulties, and the availability of appropriate training and resources. The findings were synthesised narratively to develop recommendations for strengthening the integration of child psychology into Sri Lankan educational practice.

Literature was selected according to its relevance to the objectives of the review and its contribution to understanding the relationship between child psychology and educational practice. Priority was given to studies examining developmental theories, child-centred teaching, early childhood education, classroom management, behavioural and socio-emotional development, inclusive education, developmental assessment, and teachers' knowledge of child psychology.

Table:1 literature -data base

No.	Database or repository	References identified	Last search date
1	Google Scholar	Abesooriya (2020), Alawattegama (2020), Balasundaram (2024), Herth and Jayathissa (2024), and other relevant articles	24 May 2026
2	PubMed	Caldera et al. (2023), Chandradasa and Kuruppuarachchi (2017), de Zoysa et al. (2008, 2010, 2021), Rodrigo et al. (2011)	21 June 2026

3	ERIC	Jayasinghe (2017), Menikdiwela and Vojtová (2017), Nastasi and Jayasena (2014), and related education research	4 June 2026
4	Scopus	Relevant peer-reviewed journal articles included in the review	14 July 2026
5	Web of Science	Relevant articles in education, psychology, and social sciences	1 June 2026
6	Crossref	DOI-related publication records, including Chandradasa and Kuruppuarachchi (2017) and Chandradasa et al. (2023)	13 June 2026

Peer-reviewed journal articles were prioritised. Relevant books, book chapters, conference papers, theses, institutional reports, and policy documents were also considered when they provided important theoretical, empirical, or contextual information. International studies were included where they contributed to understanding psychological theories or educational approaches relevant to the Sri Lankan context.

Sources were excluded when they lacked a clear connection to the review objectives, provided insufficient information for meaningful analysis, or did not contribute to understanding child psychology in teaching. The relevance of international findings was considered in relation to the cultural, social, and educational characteristics of Sri Lanka.

3. Classical Developmental Theories

Classical developmental psychology theories provide foundational frameworks that inform educational practice in Sri Lanka, though their application is often implicit rather than explicitly articulated in teacher training and curriculum design. Research examining folk play songs in Sri Lanka's Matara District demonstrates the practical application of major developmental theories, including Vygotsky's Social Development Theory, Piaget's Theory of Cognitive Development, and Gardner's Theory of Multiple Intelligences, showing how traditional cultural practices align with established psychological principles. These theories emphasize that children's cognitive development progresses through identifiable stages and that social interaction plays a crucial role in learning.

Teacher education programs in Sri Lanka reference key developmental and psychological figures including John Dewey, Jerome Bruner, Albert Bandura, Abraham Maslow, and Carl Jung, suggesting that foundational frameworks related to constructivism, social learning, humanistic psychology, and psychoanalytic perspectives inform the preparation of educators for primary education (Faculty of Arts & Culture, Eastern University, n.d.). However, the extent to which these theoretical frameworks are systematically translated into classroom practice remains variable across different educational settings.

The REACH developmental assessment tool, designed for 2-5 year old children in Sri Lanka, incorporates neural plasticity theory, emphasizing that the brain has immense potential to rewire and repair during the critical 0-5 year period (Caldera et al., 2023). This neurobiological perspective underscores the importance of early detection and intervention, aligning assessment practices with contemporary understanding of early childhood development. The tool's development process was aligned with established psychometric literature and mapped within the National Preschool Standards Framework, demonstrating efforts to ground assessment practices in both theoretical and policy frameworks.

3.2 Socio-Cultural and Contextual Frameworks

Classical developmental psychology theories provide a foundation for educational practice in Sri Lanka, though their use is often implicit in teacher training and curriculum design. Research on folk play songs in the Matara District shows how Vygotsky's Social Development Theory, Piaget's Cognitive Development Theory, and Gardner's Multiple Intelligences align with traditional cultural practices. These theories emphasize that cognitive development progresses through stages and that social interaction is key to learning.

Teacher education programs in Sri Lanka reference figures such as Dewey, Bruner, Bandura, Maslow, and Jung. This suggests that constructivism, social learning, humanistic psychology, and psychoanalytic perspectives shape how teachers are prepared for primary education (Faculty of Arts & Culture, Eastern University, n.d.). But the translation of these theories into classroom practice varies across settings.

The REACH developmental assessment tool for children aged 2 to 5 in Sri Lanka is grounded in neural plasticity theory. It focuses on the brain's ability to rewire during the critical first five years (Caldera et al., 2023). This neurobiological approach supports early detection and intervention. The tool was developed within psychometric standards and the National Preschool Standards Framework, linking assessment to both theory and policy.

3.1 Contemporary Psychological Perspectives

3. Psychological Approaches Used in Teaching Children in Sri Lanka

Contemporary psychological approaches in Sri Lankan education include character development frameworks, trauma-informed practices, and positive psychology.

The LEAPS program (Leadership, Empathy, Altruism, Personal Growth, and Social Responsibility) is a character strength program developed in Sinhala for early adolescents. It uses web-based modules led by teachers to build character, emotional regulation, and tolerance

(Chandradasa et al., 2023). The program reflects a growing focus on social-emotional skills as part of holistic child development.

Trauma-informed approaches are especially relevant in post-conflict areas of Sri Lanka, where children may have experienced violence and displacement. While explicit trauma-informed frameworks are not consistently mentioned in the literature, programs addressing violence prevention and psychological well-being implicitly apply an understanding of how adversity affects development and learning (Lam et al., 2018; Nastasi & Jayasena, 2014).

The Montessori approach has been examined for promoting fine motor skills in toddlers in Sri Lanka. It emphasizes learner-centered strategies, hands-on learning, reflective practice, individualized attention, and socio-emotional growth (Nakkawita, 2025). This aligns with current priorities around active learning, child agency, and developmentally appropriate practice.

3.4 Early Childhood Education Approaches

Early childhood education in Sri Lanka uses diverse psychological approaches to support holistic development in the early years. Child-centered pedagogy is a foundational approach, but research suggests that many preschools follow curricula that do not fully align with holistic development principles (Weerasinghe & Senarath, n.d.). Teachers' views on child-centered pedagogy show ongoing tension between traditional teacher-directed methods and the understanding that young children learn best through active exploration and play.

The REACH assessment tool is one example of a developmentally appropriate approach. It uses storytelling through a storybook to assess and support language, cognition, and social-emotional skills in preschool classrooms (Caldera et al., 2023). Social-emotional and adaptive skills are assessed through structured observations, especially during storybook reading. This helps teachers deliver child-directed strategies that foster school readiness and support inclusive education.

Play-based learning is another key approach. Research on folk children's play songs shows how rhythm, rhyme, alliteration, and repetition enhance memory, while group activities promote social harmony. The Montessori method, applied in Sri Lankan contexts, emphasizes learner-centered strategies such as practical life activities, sensory and outdoor learning, art tasks, hands-on learning, and individualized attention that supports socio-emotional development (Nakkawita, 2025).

Teaching methods for quality early childhood education focus on experiential, play-based, and inquiry-driven approaches for pre-primary learners. These methods align with young children's developmental needs (Teaching Methods and Strategies for Quality Childhood Education, 2025). Tailoring teaching strategies to the learner's age, subject, objectives, and classroom environment helps reduce stress and creates a more joyful learning experience.

3.5 Behavioural and Classroom Management Strategies

Behavioural approaches and classroom management are key parts of psychological practice in Sri Lankan classrooms, but their sophistication varies. Teachers working with children who have learning difficulties in rural Sri Lanka use an integrated approach. They combine behavioural elements such as direct instruction, modelling, practice, reinforcement, and feedback with constructivist elements like independent work, group discussions, and reflection (Wickremesooriya, 2016). Thematic units based on students' experiences help engage these learners.

Primary school teachers' approaches to children with ADHD rely on general classroom management and behavioural strategies, but they often lack specialized knowledge (Menikdiwela & Vojtová, 2017). Common practices include asking children not to misbehave, calling their names to maintain focus, repeating task directions, and giving simple individual tasks. Teachers do not have formal training in behavioral assessments or developing proper intervention plans.

Research shows that primary school teachers have positive attitudes toward behavioral therapy for ADHD, and that training in child psychology significantly improves their knowledge and attitudes (Rodrigo et al., 2011). This highlights the value of professional development for building behavioral management skills.

Disciplinary practices remain a challenge. Studies show that corporal punishment and psychological aggression are still common, despite evidence of their harmful effects on children (de Zoysa et al., 2006, 2008, 2010, 2021). The gap between traditional discipline and positive behavior support is a major obstacle to applying child psychology principles in Sri Lankan classrooms.

3.6 Social-Emotional Learning and Character Development

Social-emotional learning and character development are becoming bigger parts of how educational psychology works in Sri Lanka. Teachers who work with young kids have a big job when it comes to building social skills in preschool students. Things like how a teacher acts, their personality, and the activities they plan all play a part in how kids learn to get along with others (Herth & Jayati's, 2024). The way teachers talk to students, their teaching style, and the kind of classroom they create shape how children grow socially. Some methods for encouraging good social behaviour in Sri Lankan preschoolers include classroom tasks that focus on sharing, lending a hand to others, and using group work (S. P., 2016). These hands-on classroom approaches try to build positive social bonds and friendships among young kids. They set the stage for kids to become socially skilled later on. In Sri Lankan preschools, early efforts to stop violence aim to cut down on aggressive actions while boosting helpful behaviors through different teacher strategies (D, n.d.). Teachers might tell students what to do or show them through activities. They might focus on one child at a time or work with the whole group. Some teachers take a firm, directive approach while others let kids have more say. Storytelling, puppet shows, and role-playing help teachers bring in religious lessons. They also ask for quiet, give praise, stop

unfair treatment, and sort out fights between children. For older kids in early adolescence, there is a more organized program called LEAPS character strengths (Chandradasa et al., 2023). This online program has ten interactive parts with different cultural tasks and questions. Teachers run it as a school activity for grade 8 students in their classrooms. It tries to build character, help kids manage their emotions, and teach tolerance. The program looks at both personal mental health and bigger goals for social peace. Using teaching methods that respect gender differences in classrooms that include everyone is another piece of social-emotional learning. These methods get students more involved, cut down on gender-based unfairness, and lead to higher self-esteem, better friendships, and a stronger feeling of belonging for teenagers (Fernando, 2025).

3.7 Challenges in Applying Child Psychology in Sri Lankan Classrooms

Psychological approaches for inclusive education and helping children with special needs in Sri Lanka show that people are starting to recognize how different learning needs can be. Even so, putting these ideas into practice comes with real problems. Teaching kids who struggle with learning in rural Sri Lanka happens through community-based rehabilitation projects. This work shows a mix of behavioural and constructivist methods. Teachers use direct instruction along with chances for students to work on their own. They also have group talks and time to think things over (Wickremesooriya, 2016). Using themes from students' own lives helps keep learners with difficulties engaged.

Finding out which primary school kids need special education is a key first step. It helps get them the right psychological and school support. But in many Sri Lankan schools, the ways to screen and identify these needs are not well developed (Dissanayake & Panditaratne, n.d.). Teachers often do not have training to spot delays in development, learning disabilities, or behaviour problems. This limits how much they can step in early or make good adjustments for students. Applied Behavioural Analysis (ABA) for Autism Spectrum Disorders is

one specialized psychological method used in Sri Lanka. However, getting to trained professionals and proven treatments is still hard (Attygalle, 2023). These structured behaviour methods need special training and resources. Most of the Sri Lankan school system does not have these widely available. Child-friendly learning spaces in Sri Lankan preschools focus on good teaching and learning. Instruction matches each child's developmental stage and abilities (Jesuiya & Mukunthan, 2025). This inclusive way of thinking recognizes that every child does better when teaching fits their own learning pace, style, and needs.

3.8 Teacher Knowledge and Awareness Gaps

Significant gaps in teachers' knowledge and awareness of child psychology principles represent a fundamental challenge to effective application in Sri Lankan classrooms. Research on primary school teachers' knowledge and attitudes toward childhood ADHD reveals that while teachers show positive attitudes toward behavioural therapy, their actual knowledge of ADHD symptoms, causes, and evidence-based interventions is limited (Rodrigo et al., 2011). Training in child psychology significantly improves teachers' knowledge and attitudes, suggesting that current pre-service and in-service training programs provide insufficient preparation in this area.

Teachers' understanding of ADHD through their own eyes reveals reliance on intuitive classroom management strategies rather than evidence-based behavioral interventions (Menikdiwela & Vojtová, 2017). Teachers use normal classroom management, academic, and behavioural intervention strategies due to lacking proper knowledge, and they lack formal training in conducting behavioural assessments or developing proper behavioural and educational intervention plans. This knowledge gap limits teachers' ability to effectively support children with developmental and behavioural challenges.

The gap between child-centered pedagogical principles and actual classroom practice in Sri Lankan preschools reflects limited understanding of

how young children learn and develop (Weerasinghe & Senarath, n.d.). While teachers may express support for child-centered approaches in principle, translating these principles into practice requires deeper understanding of child development, learning processes, and appropriate pedagogical strategies. Research indicates that Sri Lankan preschools often practice curricula inappropriate for holistic early years development, suggesting that teacher knowledge gaps contribute to misalignment between developmental needs and educational practice.

Limited awareness of developmental psychology theories and their practical applications represents another dimension of the knowledge gap. While teacher education programs reference major psychological theorists, the extent to which teachers develop deep, applicable understanding of these frameworks and can translate them into classroom practice remains unclear (Faculty of Arts & Culture, Eastern University, n.d.; Jayasinghe, n.d.). An eLearning course on child psychology for primary school teachers at Regent International College, Gampaha, was developed to address this gap, focusing on growth and development of the child and requirements at different levels, as well as major theories on child psychology (Jayasinghe, n.d.).

3.9 Resource and Infrastructure Limitations

Resource and infrastructure limitations significantly constrain the application of child psychology principles in Sri Lankan classrooms, particularly in rural and underserved areas. Teachers' perspectives on challenges of implementing quality early childhood education in the Batticaloa District reveal that teachers face difficulties executing classroom activities due to lack of technological aids, absence of a standard curriculum, and insufficient training programs (Balasundaram, 2024). These resource constraints limit teachers' ability to implement developmentally appropriate practices even when they possess relevant knowledge and motivation.

The development of culturally appropriate assessment tools and interventions requires significant investment in research, development,

and validation processes. The REACH developmental assessment tool represents a valuable contribution, but its development required substantial resources and expertise (Caldera et al., 2023). Scaling such tools across the Sri Lankan educational system and ensuring teachers have adequate training and support to use them effectively presents ongoing challenges.

Access to specialized support services for children with developmental delays, learning disabilities, and behavioral disorders remains limited, particularly outside urban centers. While community-based rehabilitation projects have demonstrated effectiveness in supporting children with learning difficulties in rural Sri Lanka, these programs reach only a small fraction of children who could benefit (Wickremesooriya, 2016). The lack of school psychologists, special education teachers, and other specialized professionals limits the support available to classroom teachers working with diverse learners.

Infrastructure limitations also affect the implementation of technology-enhanced psychological interventions. While web-based programs like LEAPS show promise for delivering character development and social-emotional learning content (Chandradasa et al., 2023), and ICT-enabled childhood education demonstrates potential benefits (Rahuman et al., 2011), many Sri Lankan schools lack reliable internet access, computers, and other technological infrastructure necessary to implement such programs at scale.

3.10 Disciplinary Practices and Violence Prevention

Disciplinary practices in Sri Lankan schools represent a significant challenge to applying contemporary child psychology principles, with research documenting ongoing use of corporal punishment and psychological aggression despite evidence of their harmful effects on children's psychological development (de Zoysa et al., 2006, 2008, 2010, 2021). The tension between traditional disciplinary approaches emphasizing obedience and control and contemporary understanding of positive

behavior support and child rights creates ongoing challenges for teachers and schools.

Research on disciplining in Sri Lankan schools reveals that corporal punishment remains prevalent across educational settings, reflecting deeply embedded cultural beliefs about discipline and child-rearing (de Zoysa et al., 2021). Consequences of parental corporal punishment on 12-year-old children in the Colombo district demonstrate negative psychological outcomes, and outcomes of parental use of psychological aggression on children show harmful effects on child development (de Zoysa et al., 2008, 2010). These findings underscore the need for fundamental shifts in how discipline is conceptualized and practiced in both home and school settings.

Teachers' attitudes toward corporal punishment, explored in relation to their knowledge and perceived skills pertaining to child protection, reveal complex relationships between teachers' beliefs, knowledge, and practices (B. D. D. Pathirana, 2017). While some teachers recognize the counterproductive effects of punishment, many continue to rely on punitive approaches due to limited knowledge of alternative strategies, cultural norms supporting physical discipline, and lack of systemic support for implementing positive behavior management approaches.

Early violence prevention in Sri Lankan preschools represents an important area of intervention, with teachers implementing practices to minimize aggressive behaviours and promote prosocial behaviours (D, n.d.). However, the effectiveness of these practices varies, and teachers often lack systematic training in evidence-based violence prevention strategies. The Be Safe program represents one effort to prevent violence against children in schools, though scaling such programs and ensuring sustainable implementation remains challenging (Lam et al., 2018).

3.11 Curriculum and Policy Constraints

Curriculum and policy constraints limit the systematic integration of child psychology principles into Sri Lankan educational practice. The absence of a standardized curriculum for early

childhood education, noted as a challenge by teachers in the Batticaloa District, contributes to inconsistency in the quality and developmental appropriateness of preschool education across different settings (Balasundaram, 2024). While the National Preschool Standards Framework provides some guidance, its implementation varies considerably across the diverse landscape of Sri Lankan preschools.

Free education policy and its emerging challenges in Sri Lanka highlight broader systemic issues affecting educational quality and the integration of contemporary pedagogical approaches (Alawattegama, 2020). While universal access to education represents a significant achievement, ensuring that this education is developmentally appropriate, psychologically supportive, and effective in promoting positive outcomes for all children requires ongoing policy attention and resource allocation.

Critical evaluation of the ownership and responsibilities of early childhood care, development, and education in Sri Lanka reveals fragmentation across multiple sectors and stakeholders, limiting coherent policy development and implementation (Abesooriya, 2020). This fragmentation affects the systematic integration of child psychology principles, as different actors may operate with different understandings, priorities, and approaches.

School counselling in Sri Lanka, analysed in terms of past practice and future directions, reveals limited integration of psychological support services into the educational system (B. D. Pathirana, 2016). While school counsellors could play a crucial role in supporting teachers' application of child psychology principles and providing direct services to students, the counselling infrastructure remains underdeveloped. The role of school counsellors in enhancing child protection in Sri Lankan government schools represents an important but underutilized resource (Gunaratne, 2025).

3.12 Current State of Teacher Training in Child Psychology

The current state of teacher training in child psychology in Sri Lanka reveals significant variability in the depth, quality, and practical applicability of psychological content in pre-service and in-service programs. Teacher education programs reference major psychological theorists and developmental frameworks, with programs at institutions like Eastern University including content on child development and psychology to prepare educators for primary education teaching (Faculty of Arts & Culture, Eastern University, n.d.). This content links psychological understanding directly to qualifying for a license to teach primary education, suggesting recognition of its importance.

However, the extent to which teacher training programs provide deep, applicable understanding of child psychology that translates into effective classroom practice remains limited. An eLearning course on child psychology developed for primary school teachers at Regent International College, Gampaha, was designed to address gaps in teachers' understanding of growth and development of the child and requirements at different levels, as well as major theories on child psychology (Jayasinghe, n.d.). The need for such supplementary training suggests that standard pre-service programs may not adequately prepare teachers in this domain.

Students' perceptions of a short course on early childhood development at the Open University of Sri Lanka provide insights into how teachers and prospective teachers engage with child development content (Yumna et al., 2024). While specific findings are not detailed in the available metadata, the existence of such courses reflects efforts to expand access to child development training beyond traditional pre-service programs.

Early childhood education degree programs for non-state higher education institutes in Sri Lanka have been proposed based on needs surveys, suggesting growing recognition of the importance of specialized training for early childhood educators (Kurukulaarachchi, 2023). However, the implementation and quality of such programs varies considerably across the diverse landscape of teacher training institutions in Sri Lanka.

3.13 Knowledge and Attitude Toward Developmental Disorders

Teachers' knowledge and attitudes toward developmental disorders represent a critical dimension of psychological competency, with research revealing significant gaps that limit effective support for children with special needs. The knowledge and attitude of primary school teachers in Sri Lanka toward childhood ADHD demonstrates that while teachers show positive attitudes toward behavioural therapy in classroom settings, their actual knowledge of ADHD is limited (Rodrigo et al., 2011). Training in child psychology significantly improved teachers' knowledge and attitudes regarding ADHD interventions, highlighting both the current deficit and the potential for improvement through targeted professional development.

Attention-Deficit/Hyperactivity Disorder through Sri Lankan primary school teachers' eyes reveals that teachers rely on intuitive strategies rather than evidence-based interventions due to lacking proper knowledge (Menikdiwela & Vojtová, 2017). Teachers use normal classroom management strategies, frequently call children's names to maintain focus, and repeat task directions, but lack formal training in conducting behavioural assessments or developing proper behavioural and educational intervention plans. This gap between teachers' daily experiences with children exhibiting ADHD symptoms and their capacity to provide evidence-based support represents a significant challenge.

The identification of special education needs of primary school children in Sri Lanka remains underdeveloped, with many teachers lacking training in recognizing developmental delays, learning disabilities, and behavioral disorders (Dissanayake & Panditaratne, n.d.). This limits early identification and intervention, potentially affecting long-term outcomes for children with special needs. Systematic screening and referral processes are not consistently implemented across Sri Lankan schools, placing the burden of identification on classroom teachers who may lack the necessary knowledge and tools.

The use of Applied Behavioural Analysis for Autism Spectrum Disorders in Sri Lanka represents a specialized area where teacher knowledge and competency gaps are particularly pronounced (Attygalle, 2023). While ABA represents an evidence-based approach for supporting children with autism, few teachers have received training in these methods, and access to specialized professionals who can provide consultation and support remains limited.

3.14 Professional Development Needs and Opportunities

Professional development needs related to child psychology in Sri Lankan education are substantial and multifaceted. Research consistently demonstrates that training in child psychology improves teachers' knowledge, attitudes, and practices (Rodrigo et al., 2011), suggesting that expanded professional development opportunities could significantly enhance the application of psychological principles in classrooms. However, current professional development systems often lack systematic, sustained, and evidence-based approaches to building teachers' psychological competencies.

A national preschool teachers' training program has been recommended to ensure quality teaching and enable children to receive quality early childhood education across Sri Lanka (Balasundaram, 2024). Such a program could provide standardized training in child development, developmentally appropriate practice, and psychological approaches to supporting young children's learning and well-being. However, implementing such a program at scale requires significant investment in curriculum development, trainer preparation, and ongoing support systems.

Postgraduate training in psychotherapy in Sri Lanka has been examined in terms of the need for a systematic approach (Hanwella, 2012), and achievements and challenges in psychiatric education and training in Sri Lanka have been documented (Hapangama et al., 2021). While these programs focus on clinical training rather than teacher education, they highlight broader issues in

psychological training infrastructure that affect the availability of expertise to support educational applications of psychology.

Subspecialisation in postgraduate psychiatry and implications for child and adolescent mental health services underscore the limited availability of specialized professionals who could support teachers and schools in addressing children's psychological needs (Chandradasa & Champika, 2019). The shortage of child and adolescent mental health professionals affects not only direct clinical services but also the consultation and training support available to educators.

International partnerships, such as the collaboration promoting psychological well-being in Sri Lankan schools, demonstrate the potential for capacity building through sustained engagement with international expertise (Nastasi & Jayasena, 2014). This partnership utilized participatory culture-specific system consultation to develop local capacity for psychological intervention and research, suggesting that international collaboration can contribute to strengthening psychological competencies in education when approached in culturally responsive ways.

3.15 Developmental Assessment and Screening Tools

Developmental assessment and screening represent critical applications of child psychology in early childhood education, enabling early identification of developmental delays and targeted intervention. The REACH (Ragama Early Assessment for Children) developmental assessment tool, designed for 2-5 year old children in Sri Lanka, represents a significant advancement in culturally appropriate, teacher-administered developmental screening (Caldera et al., 2023). This assessment utilizes storytelling through a storybook to assess and support language, cognition, and social-emotional skills in preschool classroom settings, with social-emotional and adaptive skills assessed through structured classroom observations.

The development of REACH was grounded in neural plasticity theory, emphasizing the brain's immense potential to rewire and repair during the

critical 0-5 year period, and highlighting the importance of early detection and investment in early intervention (Caldera et al., 2023). The assessment development process was aligned with established psychometric literature and items were mapped within the National Preschool Standards Framework, ensuring both scientific rigor and policy alignment.

The tool is designed to be conducted by preschool teachers in their preschool setting, recognizing teachers as resourceful links within the community for detecting and offering interventions early.

However, the availability and use of standardized, validated developmental assessment tools remain limited across Sri Lankan early childhood settings. Preschool children in low resource settings are at higher risk of missing developmental potential due to lack of such tools (Caldera et al., 2023). While REACH represents an important contribution, scaling its use across the diverse landscape of Sri Lankan preschools and ensuring teachers receive adequate training and ongoing support in its administration and interpretation presents ongoing challenges.

The identification of special education needs of primary school children in Sri Lanka remains underdeveloped, with systematic screening processes not consistently implemented (Dissanayake & Panditaratne, n.d.).

This gap in assessment infrastructure limits early identification and intervention for children with developmental delays, learning disabilities, and behavioral disorders, potentially affecting their long-term educational and psychological outcomes.

3.16 Preschool Pedagogical Practices

Preschool pedagogical practices in Sri Lanka reflect diverse approaches to supporting young children's development, though the quality and developmental appropriateness of these practices varies considerably across settings. Child-centered pedagogy represents an aspirational framework, though research on preschool teachers' perceptions reveals that Sri Lankan preschools often practice curricula inappropriate for holistic early years

development (Weerasinghe & Senarath, n.d.). The gap between child-centered principles and actual practice reflects multiple factors including teacher knowledge, resource constraints, and cultural expectations about early education.

The role of early childhood educators in cultivating social skills among preschool students demonstrates that teacher behaviour, personality traits, and designed activities significantly influence social skill development (Herth & Jayathissa, 2024). Educators' interactions with students, teaching approaches, and created learning environments play pivotal roles in shaping young learners' social development. Techniques used by teachers, classroom management strategies to improve social skills, and the effects of teacher attitudes all contribute to the social-emotional climate of preschool classrooms.

Strategies to develop pro-social behaviour of preschool children in Sri Lanka include practical classroom activities focused on sharing, helping each other, encouraging pro-social behaviour, and utilizing collaborative activities (S. P., 2016). These strategies reflect teachers' efforts to promote positive social interactions and relationships, though the systematic and evidence-based nature of these approaches varies.

The effectiveness of Montessori methods in promoting fine motor skills among toddlers in Sri Lanka demonstrates the potential of alternative pedagogical approaches grounded in developmental psychology (Nakkawita, 2025). Montessori practices emphasize learner-centered strategies, practical life activities, sensory and outdoor learning, art-oriented tasks, hands-on learning through doing, reflective practice, and individualized attention fostering socio-emotional development. However, access to Montessori education remains limited, primarily available in private preschools serving more affluent families.

Child-friendly learning environment characteristics in Sri Lankan preschools emphasize good quality teaching and learning processes with instruction appropriate to each child's developmental level and abilities (Jesuiya & Mukunthan, 2025). Creating

such environments requires understanding of child development, appropriate materials and resources, and teacher competencies in observation, planning, and responsive interaction with young children.

3.17 School Readiness and Transition Support

School readiness and transition support represent important applications of developmental psychology in early childhood education, preparing children for successful entry into formal schooling. The REACH assessment tool is designed to foster school readiness and enhance inclusive formal education through child-directed early education strategies (Caldera et al., 2023). By assessing children's language, cognition, social-emotional, and adaptive skills, teachers can identify areas where additional support is needed and tailor their instruction to promote readiness for primary school.

The sociological study on the impact of preschool education for child socialization in Opanayaka SR division, Sri Lanka, examines how early childhood education contributes to children's social development and preparation for school (Iwuagwu et al., 2025). While specific findings are not detailed in available metadata, this research highlights the recognized importance of preschool education in supporting children's transition to formal schooling.

Teaching methods and strategies for quality childhood education emphasize the importance of developmentally appropriate approaches at both pre-primary and primary levels, recognizing that effective transitions require alignment between early childhood and primary education practices (*Teaching Methods and Strategies for Quality Childhood Education*, 2025). Experiential, play-based, and inquiry-driven methods recommended for pre-primary learners should connect with the more diverse toolkit of discussion, demonstration, and project-based learning used in primary grades, ensuring continuity in children's learning experiences.

However, challenges in implementing quality early childhood education, as documented in the Batticaloa District, suggest that many preschools may not adequately prepare children for primary

school (Balasundaram, 2024). Teachers face difficulties executing classroom activities due to resource constraints, lack of standardized curriculum, and insufficient training, potentially affecting children's school readiness and transition experiences.

3.18 Socio-Cultural Factors Influencing Child Psychology in Teaching

3.18.1 Cultural Values and Traditional Practices

Cultural values and traditional practices significantly shape how child psychology is understood and applied in Sri Lankan educational contexts. Folk children's play songs in Sri Lanka's Matara District demonstrate how traditional cultural practices serve as a "psychological treasure" in early childhood education and personality formation (Safna, 2026). These songs utilize rhythm, rhyme, alliteration, and repetitive lines to enhance children's memory, while group activities foster social harmony within multi-ethnic social backgrounds. This research, grounded in Vygotsky's Social Development Theory, Piaget's Theory of Cognitive Development, and Gardner's Theory of Multiple Intelligences, illustrates how indigenous practices align with established psychological principles.

Cultural values regarding discipline, obedience, and respect for authority influence disciplinary practices in Sri Lankan schools, with corporal punishment and psychological aggression remaining prevalent despite evidence of their harmful effects (de Zoysa et al., 2006, 2008, 2010, 2021). Teachers' attitudes toward corporal punishment reflect complex relationships between cultural beliefs, knowledge of child development, and perceived skills in child protection (B. D. D. Pathirana, 2017). Shifting from punitive to positive approaches requires not only teacher training but also broader cultural change in how discipline and child-rearing are conceptualized.

The influence of social pedagogy toward educational well-being in Sri Lanka emphasizes the importance of teacher-student relationships, academic support, and community involvement (Careemdeen et al., 2021). This perspective aligns with Sri Lankan cultural values emphasizing social

relationships, collective responsibility, and holistic well-being, suggesting that culturally congruent approaches to child psychology in education should emphasize relational and community dimensions rather than focusing solely on individual child development.

Learning about culture from children in rural Sri Lanka highlights how children themselves are active participants in cultural transmission and meaning-making (Chapin, 2018). This perspective challenges adult-centric views of child development and education, recognizing children's agency and cultural competence. Understanding how children experience and navigate their cultural contexts is essential for developing culturally responsive psychological approaches in education.

3.19 Post-Conflict and Trauma-Informed Considerations

Post-conflict contexts in Sri Lanka, particularly in the Northern and Eastern provinces, present unique challenges and considerations for applying child psychology in education. The mental health of war-affected children and community-based rehabilitation and reconciliation programs in Sri Lanka's Eastern Province address the psychological impacts of conflict exposure on children's development and well-being (Bush, 2002). Children affected by war may experience trauma, loss, displacement, and disrupted education, requiring trauma-informed approaches that recognize these experiences and their effects on learning and behaviour.

Child and youth mental health in postwar Sri Lanka highlights ongoing challenges in addressing the psychological needs of children and adolescents affected by conflict (Chandradasa & Kuruppuarachchi, 2017). Limited availability of mental health services, particularly in conflict-affected regions, means that teachers often serve as frontline responders to children's psychological distress. However, teachers typically lack training in trauma-informed approaches and may not recognize signs of trauma or know how to provide appropriate support.

The LEAPS character strengths program for early adolescent school children was designed in part to mitigate past trauma and promote social harmony (Chandradasa et al., 2023). This web-based program, promoting Leadership, Empathy, Altruism, Personal Growth, and Social Responsibility, recognizes that character development and emotional regulation are particularly important for youth who have experienced conflict and social division. The program's focus on tolerance and social harmony reflects awareness of post-conflict reconciliation needs.

Lost childhoods and the intersection of trauma, care, and ethnic conflict, examined through literary analysis, provides insights into how conflict affects children's psychological development and the importance of care and support in mitigating these effects (Bandara et al., 2025). While this research focuses on literary representation rather than educational practice, it highlights the psychological realities that many Sri Lankan children and teachers navigate.

3.20 Community and Family Engagement

Community and family engagement is an essential component of applying child psychology in Sri Lankan education, as it is a cultural preference to raise and educate children. The influence of social pedagogy toward educational well-being prioritizes arranging diverse activities and mechanisms that engage teachers, parents, and community members to improve educational well-being (Careemdeen et al., 2021). Teaching children with learning difficulties through community-based rehabilitation projects in rural Sri Lanka is an example of engaging the community in children's education who have special needs (Wickremesooriya, 2016). The phenomenon suggests that the community plays a critical role in students' psychological development and educational success.

Children-focused activities in Sri Lanka, despite the absence of metadata, appear to highlight the community's engagement in children's development and education (Wickramaratne, 2016). Engaging the community in children's development

and education can take many forms, such as after-school programs for children and the organization of cultural events.

On the contrary, some barriers are associated with family and community engagement in children's psychological growth and education. For instance, the consequences of parental corporal punishment and psychological aggression towards children need to be addressed by parent education programs that encourage positive parenting styles according to child development experts' (de Zoysa et al., 2008, 2010). Family and community engagement in children's psychological development and education necessitates persistent efforts in overcoming cultural beliefs and practices while enhancing the knowledge and skills of parents and community members to strengthen their interactions with children.

4. Research Gaps

Despite a growing body of literature on child psychology and educational practice in Sri Lanka, several significant research gaps remain. First, the majority of existing studies are descriptive or exploratory in nature, with a notable absence of experimental or quasi-experimental research designs. Consequently, the causal effectiveness of specific psychological interventions and teaching approaches in Sri Lankan classrooms has not been rigorously established. There is a pressing need for intervention studies with control conditions that can provide stronger evidence for the effectiveness of child psychology-informed pedagogical practices.

Second, geographic and demographic representation in the existing literature is uneven. The majority of studies are concentrated in urban and peri-urban settings, with rural communities particularly in the Northern, Eastern, and Uva provinces remaining substantially under-researched. Children from minority ethnic and linguistic communities, including Tamil-medium and Muslim schools, are similarly underrepresented. This limits the generalisability of current findings and the development of culturally responsive, context-specific educational policies.

Third, longitudinal research tracking the developmental trajectories of children within the Sri Lankan educational system is largely absent. Most studies capture cross-sectional data, making it difficult to assess the sustained impact of early educational experiences on later developmental outcomes. Additionally, research examining the specific psychological training needs of in-service teachers — beyond pre-service preparation — and the systemic barriers to implementing evidence-based practices at the school and policy levels remains limited. Addressing these gaps should be a priority for future research to strengthen the evidence base for child psychology integration in Sri Lankan education.

5. Recommendations for Practice

5.1 Enhancing Teacher Training and Professional Development

Improving teacher training and professional development in child psychology is the central recommendation on how to improve the use of psychology in Sri Lankan education. The country needs to develop a national preschool teachers' training program to ensure quality teaching and provide children with high-quality early childhood education in all settings (Balasundaram, 2024). Such a program should cover a wide range of topics related to child development, developmentally appropriate practice, observation and assessment, and psychological approaches to supporting young children's learning and well-being.

Child psychology should be taught as part of pre-service teacher education programs rather than as a separate subject. Students need to understand developmental theories and their implications for practice, learn how to observe and assess children's development, and practice using psychological approaches to support learning and well-being (Faculty of Arts & Culture, Eastern University, n.d.; Jayasinghe, n.d.). Field experiences should allow students to apply their knowledge and skills under the supervision and guidance of experienced teachers and receive feedback on their practice.

In-service professional development should address identified gaps in teachers' knowledge and

competencies, particularly regarding developmental disorders, behavioral interventions, and trauma-informed approaches. Training in child psychology has been shown to significantly improve teachers' knowledge and attitudes regarding ADHD and other developmental challenges (Rodrigo et al., 2011), suggesting that targeted professional development can effectively enhance teacher competencies. Professional development should be sustained, practice-based, and supported by ongoing consultation and coaching rather than consisting of isolated workshops.

Specialized training should be provided for teachers working with children with special needs, including learning disabilities, ADHD, autism spectrum disorders, and other developmental challenges (Menikdiwela & Vojtová, 2017; Dissanayake & Panditaratne, n.d.; Attygalle, 2023). This training should include both theoretical understanding and practical strategies for assessment, intervention, and collaboration with families and specialists. Community-based rehabilitation models that have demonstrated effectiveness in rural Sri Lanka could be scaled and integrated into broader teacher training systems (Wickremesooriya, 2016).

In-service professional development should focus on teachers' educational and professional gaps, including those in the field of developmental disorders, behavioural problems, and trauma-informed practices. Teacher training in child psychology has been found to influence the extent to which educators are knowledgeable about ADHD and approach the disorder (Rodrigo et al., 2011). Therefore, it may be concluded that teachers' professional development in the area of developmental and behavioural disorders can contribute to better-qualified education for children with ADHD and other psychological concerns. It is also important to ensure that professional training is continuous, practice-based, and includes consultation and coaching rather than discrete instructional units.

Teachers should be provided with opportunities for specialized professional development to better support students with learning disabilities, ADHD, autism, and other challenges (Menikdiwela &

Vojtová, 2017; Dissanayake & Panditaratne, n.d.; Attygalle, 2023). Such training should be aimed at advancing educators' theoretical knowledge and practical skills, including the ability to work with children's parents and specialists. The existing community-based rehabilitation models that have been proven effective in remote areas of Sri Lanka could be considered as a template for professional training (Wickremesooriya, 2016).

5.2 Developing Culturally Appropriate Interventions

Developing culturally appropriate psychological interventions is a crucial step in adapting child psychology practices in Sri Lankan education. The participatory culture-specific system consultation approach used by the international partnership promoting psychological well-being in Sri Lankan schools can be implemented (Nastasi & Jayasena, 2014). It entails learning the culture, conducting formative research, and collaboratively developing culture- and context-specific conceptual models, interventions, and assessment measures with stakeholders.

Culturally appropriate assessment tools should be developed, validated, and scaled in Sri Lankan educational settings (Caldera et al., 2023). They should be sensitive to regional variations in developmental domains assessed while being practical and accessible to teachers in the resource-constrained environment. The tools should be available in all major languages and account for cultural differences in developmental expectations and expressions.

Psychological interventions should be developed by building on cultural strengths and traditional practices that promote child development. The use of folk children's play songs to improve memory and foster social harmony is an example of utilizing traditional practices as psychological interventions (Safna, 2026). Similarly, storytelling, religious and cultural activities, and community-based practices can be incorporated into evidence-based interventions.

Character development and social-emotional learning programs should be adapted to Sri Lankan

cultural contexts. The LEAPS program was developed in Sinhala and included culturally relevant activities (Chandradasa et al., 2023). Such programs address both universal developmental needs and context-specific challenges like post-conflict reconciliation and multi-ethnic harmony. They should be developed through participatory approaches involving teachers, students, families, and communities.

5.3 Strengthening Policy and Systemic Support

Strengthening policy and systemic support for applying child psychology in education requires coordinated action across multiple levels of the Sri Lankan educational system. A standardized national curriculum for early childhood education should be developed and implemented, providing clear guidance on developmentally appropriate practices while allowing flexibility for local adaptation (Balasundaram, 2024). This curriculum should be grounded in child development research and aligned with the National Preschool Standards Framework, ensuring consistency in quality across diverse early childhood settings.

School counselling services should be expanded and strengthened, with trained counsellors available to support teachers, provide direct services to students, and enhance child protection (B. D. Pathirana, 2016; Gunarathne, 2025). School counsellors can serve as psychological resources within schools, providing consultation to teachers on developmental and behavioural challenges, facilitating early identification and referral of children with special needs, and delivering preventive interventions addressing social-emotional development and mental health.

Violence prevention and positive discipline policies should be developed and enforced, moving away from corporal punishment and psychological aggression toward evidence-based positive behavior support approaches (de Zoysa et al., 2021; Lam et al., 2018). These policies should be accompanied by teacher training, parent education, and community awareness campaigns addressing cultural beliefs about discipline and providing alternative strategies

for promoting positive behaviour and addressing misbehaviour.

Inclusive education policies should be strengthened to ensure that children with special needs receive appropriate support in mainstream educational settings (Wickremesooriya, 2016; Dissanayake & Panditaratne, n.d.). This requires not only policy mandates but also resource allocation for specialized training, assessment tools, instructional materials, and support services. Community-based rehabilitation models should be integrated with school-based services to provide comprehensive support for children with disabilities and learning difficulties.

5.4 Promoting Research and Evidence-Based Practice

Promoting research and evidence-based practice in child psychology and education is essential for continuous improvement and adaptation to Sri Lankan contexts. Local research capacity should be strengthened through support for graduate programs, research funding, and partnerships between universities, schools, and international collaborators (Nastasi & Jayasena, 2014). Research should address priority questions about effective psychological approaches in Sri Lankan contexts, including culturally appropriate interventions, teacher training models, and systemic implementation strategies.

Longitudinal research examining the effects of early childhood education and psychological interventions on children's developmental outcomes is needed to build the evidence base for policy and practice decisions. The impact of preschool education on child socialization and school readiness, effectiveness of different pedagogical approaches, and long-term outcomes of violence prevention and social-emotional learning programs should be rigorously evaluated (SDY, n.d.; S. P., 2016; Chandradasa et al., 2023).

Practice-based research partnerships between researchers and educators can generate actionable knowledge while building teachers' capacity for reflective practice and continuous improvement. The participatory research-intervention process

used in the international partnership promoting psychological well-being demonstrates how research and practice can be integrated to develop and refine interventions while building local capacity (Nastasi & Jayasena, 2014). Such partnerships should be expanded to address diverse aspects of child psychology in education across different regions and educational levels.

Dissemination of research findings to practitioners, policymakers, and the public is essential for translating evidence into practice. Research findings should be communicated in accessible formats, including practice briefs, professional development materials, and policy recommendations. Mechanisms for ongoing dialogue between researchers, practitioners, and policymakers should be established to ensure that research addresses practical needs and that evidence informs policy and practice decisions.

6. Conclusion

This literature review aims to provide an insight into the use of child psychology in the field of education in Sri Lanka. Studies have revealed that Sri Lankan teachers implement various methods and strategies, including child-centered approaches, behavioural, and social strategies, to foster positive development in children. Modern and innovative tools and strategies, such as the REACH developmental assessment tool, the LEAPS character strengths program, and traditional folk play songs, contribute to the possibility of successful practical implementation (Caldera et al., 2023; Chandradasa et al., 2023; safna, 2006).

Despite this, many practitioners have demonstrated insufficient knowledge of child psychology basics and theoretical approaches (Menikdiwela & Vojtová, 2017; Rodrigo et al., 2011). Teachers often approach child psychology subjectively when addressing particular issues, such as developmental disorders in children. Additionally, the lack of resources and proper infrastructure may hinder the application of theoretical knowledge in practice, mainly in remote areas affected by conflict (Balasundaram, 2024).

Moreover, physical and verbal punishment of children remains a widespread practice in Sri Lankan educational settings, even though it has been proven to be ineffective and harmful (de Zoysa et al., 2008, 2010, 2021). Thus, there is also a conceptual contradiction between traditional views on discipline and punishment and a modern understanding of the characteristics of a positive and psychologically safe environment (D, n.d. ; Lam et al., 2018). Although initiatives addressing violence against children have been implemented, this problem persists in the educational system.

The state of preschool education is also a topic of interest. On the one hand, preschool education can be considered as rather developed compared to other educational settings in Sri Lanka. The recognition of early childhood as a unique period of human life, the emergence of new tools for assessing preschool students' development, and the focus on school readiness processes indicate this tendency (Caldera et al., 2023; Herth & Jayathissa, 2024; S. P., 2016; Nakkawita, 2025).

On the other hand, the quality of education and the level of development and preparedness vary significantly depending on the preschool setting. Many preschools do not have sufficient infrastructure, qualified teaching staff, and appropriate curricula (Weerasinghe & Senarath, n.d. ; Balasundaram, 2024).

In addition, sociocultural factors are considered to make significant contributions to the patterns of child psychology in Sri Lanka. Culture-specific influences, such as traditional practices, affect the development and education of children. At the same time, post-war trauma and disrupted family dynamics are also factors to be considered (Safna, 2006; Nastasi & Jayasena, 2014; Careemdeen et al., 2021). Studies conducted in collaboration with international partners aim to understand unique cultural influences and develop evidence-based approaches to working with children and families (Nastasi & Jayasena, 2014).

Further research and practice in the field are essential to integrate the principles of child psychology into educational settings more

thoroughly. Close cooperation between educationalists, teachers, politicians, and psychologists is vital. Particular attention should be paid to teacher training and professional development. Developing and implementing specific tools and strategies based on child psychology theories, as well as evidence-based initiatives, will allow the educational system to achieve high-quality and inclusive development.

The quality of education in Sri Lanka, as well as the development and well-being of its children, is an ongoing concern. The reviewed studies offer valuable insights into the current state of the use of child psychology in the Sri Lankan educational system. Therefore, they can serve as useful guides to further research and practice in the field.

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